

Issue 23 £1

September/October

WATER SKI SCHOOL

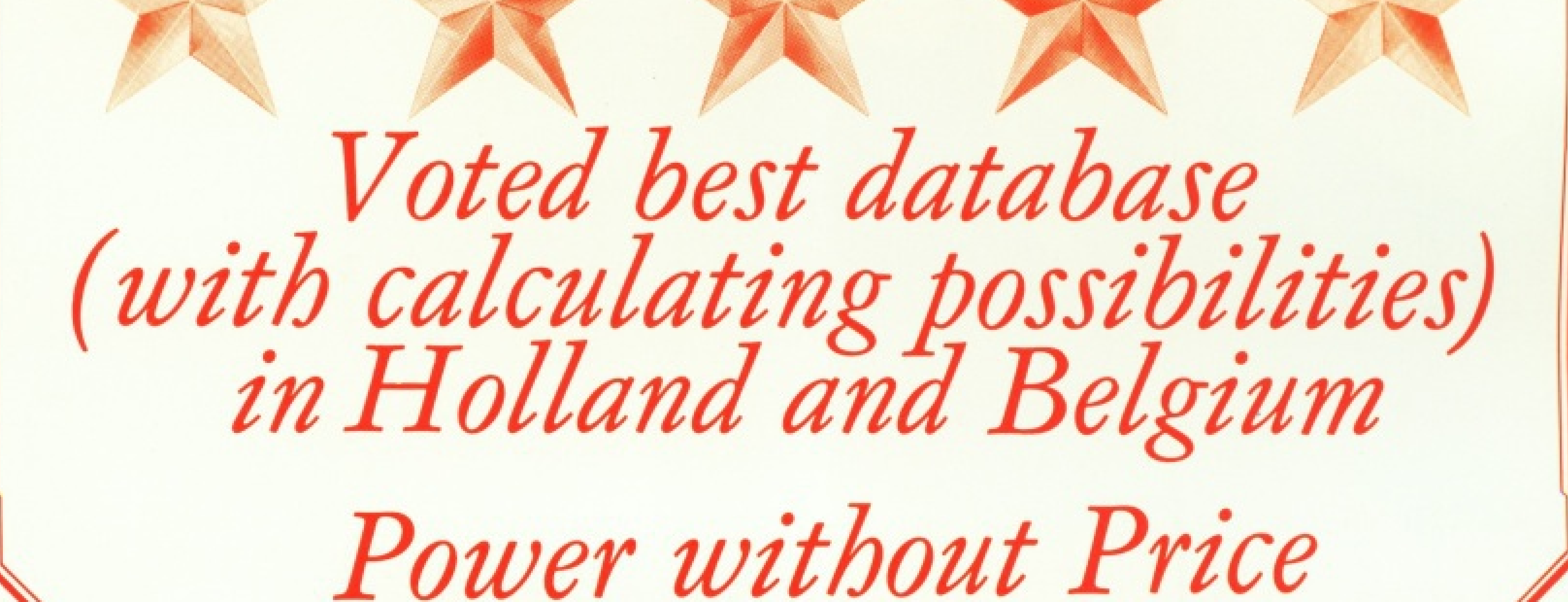
A Bigger Screen for your ST



In Depth Reviews

Replay
Movie Maker
Cut & Paste
Homepak
Ultima IV

ZOOMRACKS review



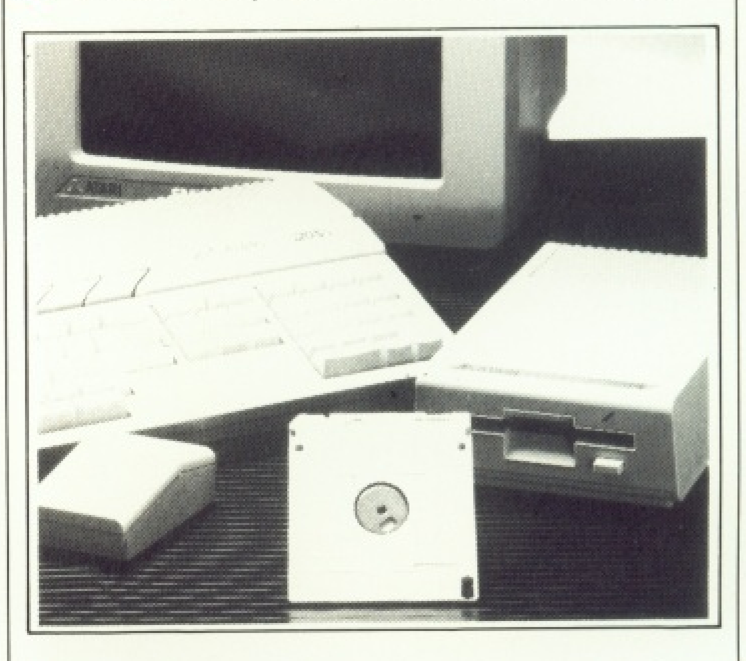
Atari DB-CALC 520 ST, 520 ST Plus, 260 ST & 1040 ST

Why spend hundreds of pounds organising your home or office life when you can do it for **£49.95.**

So simple to use no technical knowledge is needed.

An excellent easy to use database with built in calculating facilities specially designed to take full advantage of the Gem Environment and other elegant features built into your ST computer.

- Compatible with the mouse.
- Suitable for customised reports, mailing labels, memberships, sales statistics, stocklists, office and personal records, financial statistics, etc.
- Designed for half megabyte and one megabyte versions – if you upgrade you don't need to create new files as you can expand your existing ones and there is no need to buy more expensive software packages.
- Ready made files for:– Addresses, break even point analysis, cash book, labels, quantity discounts, print lists, statistics.
- Unlimited number of fields per record.
- Superfast sort and an ever faster search on a field.
- Selects on any combination of fields.
- Built in text editor which integrates with mailmerge.
- Allows all printer control functions.



- Built in calculator to help you work out difficult mathematical formulae.
- Comprehensive manual which can easily be understood.

For further information contact:–



Robtek Ltd., Unit 4, Isleworth Business Complex, St. Johns Road, Isleworth, Middx. TW7 6NL. Tel: 01-847 4457.

'The magazine for the dedicated Atari user'

Editor & Publisher
Les Ellingham

Correspondence
PAGE 6 Magazine
P.O. Box 54,
Stafford
ST16 1DR
ENGLAND

Editorial & Advertising
0785 213928

Printed by
Stafford Reprographics Ltd.
0785 3533

Typeset by
Hourds Typographica,
Stafford
0785 57700

Copy date for the next issue is 22nd September. Publication date is 1st November 1986.

PAGE 6 is published bi-monthly on the 1st of each alternative month.

PAGE 6 is a users' magazine which relies entirely on readers' support in submitting articles and programs. The aim is to explore ATARI computing through the exchange of information and knowledge. We will endeavour to pay for articles and programs where appropriate and we hope that readers will enjoy seeing their work published. In turn we hope that other readers will learn from the articles and programs submitted and increase their enjoyment of ATARI computing.





LISTINGS

FEATURES

ST SECTION

REVIEWS

Cover Illustration *Barry Armstrong*

Subscription rates – annual (6 issues)

U.K.	£ 7.00
Europe	£10.50
Elsewhere – Surface	£10.50
Elsewhere – Air	£16.00

Single copies and back issues at one-sixth of the annual rates.

Please make cheques payable to PAGE 6.

Disk Subscriptions (Magazine and disk)

U.K.	£30.00
Europe	£37.50
Elsewhere	Please enquire.

How to Type in the Listings

and get them right!

The program listings in PAGE 6 are prepared carefully to ensure that they can be typed in as easily as possible. Before typing any listings ensure that you are familiar with the use of the Shift and CONTROL and INVERSE keys as outlined in your computer manual. The listings are prepared to match exactly what you see on screen. Every character that you may see in a listing is included in the chart below for cross reference. By using TYPO 3 you can ensure that you type in the programs EXACTLY as they are printed. Remember a single typing mistake may mean a program will not run.

WHAT ARE THOSE CODES?

Each line of a program begins with a special two letter code. THESE SHOULD NOT BE TYPED IN. They are used by the program TYPO to check that you have typed each line correctly. IF YOU HAVE NOT ALREADY TYPED IN THE TYPO 3 LISTING PLEASE DO SO NOW. The program can be used as you type in each line of a program or to check an already typed program. The code for each line will match but if you have problems check the listing conventions below carefully, you are most probably typing a CONTROL character incorrectly. TYPO 3 cannot check if a line has been missed so if you have problems in running a listing count the lines in the program and ensure none are missing. If the TYPO codes match and the program still does not run, LIST it to cassette or disk using LIST "C:" or LIST "D:filename", switch off the computer, re-boot and then ENTER the program using ENTER "C:" or ENTER "D:filename". Save this version in the normal way.

HOW TO USE TYPO 3

1. Type in the listing carefully for although you can use TYPO 3 to check itself (see 6 below) it may not work if you have made mistakes.

2. SAVE or CSAVE a copy of the program.

3. Each time you want to type in a program listing RUN TYPO 3 *first*. The program will install a machine code routine in memory and then delete itself. Now type in a line as shown in the magazine *excluding the first two letter code* and press RETURN.

4. A two letter code will appear at the top left of your screen. If this code matches the one in the magazine carry on and type the next line. Note, the code will not match if you use abbreviations. If you prefer to use abbreviations LIST the line you have just typed, move the cursor to that line and press RETURN. The code should now match.

5. If the code does not match, use the editing keys to correct the line and press RETURN again. Repeat if necessary until the codes match.

6. To check a line you have already typed LIST the line, place the cursor on that line and press RETURN.

7. When you have finished a listing just SAVE or CSAVE it in the normal way.

You can type in a program without using TYPO 3 and then check it by SAVEing or CSAVEing a copy of the program, running TYPO 3 and then LOADing or CLOADing your program and proceeding as in step 6 above.

Always SAVE or CSAVE a program before running it and always use TYPO before telling us that a program will not run.

```
EI 1 REM ******************************
AL 2 REM *  TYPO III by Alec Benson    *
         *          June 1985          *
SA 3 REM * A proofreader for ANTIC and *
         *   PAGE 6 based on TYPO II   *
         * published by ANTIC magazine *
EL 4 REM ******************************
SG 100 GRAPHICS 0
WG 110 FOR I=1536 TO 1791:READ A:CK=CK+A:
   POKE I,A:NEXT I
CG 120 IF CK<>30765 THEN ? "Error in DATA
    statements - Check Typing":END
YM 130 A=USR(1536)
VT 140 ? :? "TYPO III is up and running":
   NEW
MA 1000 DATA 104,160,0,105,26,3,201,69
HG 1010 DATA 240,8,200,200,200,192,36,208
QB 1020 DATA 242,96,200,169,79,153,26,3
RK 1030 DATA 200,169,6,153,26,3,162,0
RR 1040 DATA 189,0,228,157,79,6,232,224
TO 1050 DATA 15,208,245,169,93,141,83,6
KC 1060 DATA 169,6,141,84,6,173,4,228
EU 1070 DATA 105,0,141,95,6,173,5,228
BK 1080 DATA 105,0,141,96,6,169,0,162
KK 1090 DATA 3,149,203,202,16,251,96,0
ZR 1100 DATA 0,0,0,0,0,0,0,0
LD 1110 DATA 0,0,0,0,0,0,32,94
JM 1120 DATA 6,8,72,201,155,240,55,230
TV 1130 DATA 203,133,209,138,72,169,0,133
TW 1140 DATA 208,162,8,10,38,208,6,209
MF 1150 DATA 144,7,24,101,203,144,2,230
RL 1160 DATA 208,202,208,239,133,207,24,1
    65
TM 1170 DATA 204,101,207,133,204,165,205,
    101
AW 1180 DATA 208,133,205,165,206,105,0,13
    3
XH 1190 DATA 206,104,170,104,40,96,138,72
NR 1200 DATA 152,72,162,0,134,207,134,208
GF 1210 DATA 160,24,6,204,38,205,38,206
EA 1220 DATA 38,207,38,208,56,165,207,233
TM 1230 DATA 164,170,165,208,233,2,144,4
SK 1240 DATA 134,207,133,208,136,208,227,
    162
CB 1250 DATA 8,165,207,133,204,165,208,6
XN 1260 DATA 204,42,201,26,144,4,233,26
MB 1270 DATA 230,204,202,208,242,133,205,
    169
BC 1280 DATA 128,145,88,200,192,40,208,24
    9
WV 1290 DATA 165,204,105,160,160,3,145,88
QA 1300 DATA 165,205,24,105,161,200,145,8
    8
MQ 1310 DATA 32,69,6,104,168,76,153,6
```

Lower case	Upper case or Shift
1	!
2	"
3	#
4	$
5	%
6	&
7	'
8	@
9	(
0	)
<	
>	
a	A
b	B
c	C
d	D
e	E
f	F
g	G
h	H
i	I
j	J
k	K
l	L
m	M
n	N
o	O
p	P
q	Q
r	R
s	S
t	T
u	U
v	V
w	W
x	X
y	Y
z	Z
-	_
=	|
;	:
+	\
*	^
,	[
.	]
/	?

ESC ESC
ESC CTRL -
ESC CTRL =
ESC CTRL +
ESC CTRL *
ESC SHIFT CLEAR
ESC DELETE
ESC TAB
ESC SHIFT DELETE
ESC SHIFT INSERT
ESC CTRL TAB
ESC SHIFT TAB
ESC CTRL 2
ESC CTRL DELETE
ESC CTRL INSERT

INVERSE SPACE

Editorial

REFLECTIONS

This issue is being prepared over the quiet summer period, quiet that is from the point of view of computer users who seem to forget about computing while the sun shines. Ask all the retailers (the honest ones) how business is in the summer, they would love to see more of you, and our postbag seems quite diminished too. One local micro shop has actually closed down for a month and is sending postcards to their customers via adverts in the local press! Behind the scenes, however, it is still very hectic. It still takes the same amount of time to prepare this issue and we also have to plan for the PCW show which will be upon us as you read this (Go and check out the huge Atari village!). Nevertheless it seems a good time to be a little reflective.

As I prepare this issue I am amazed at the amount of information that we manage to pack into each issue of PAGE 6. Those who complain that we are not monthly ought to reflect for a moment on the depth of some of the reviews and articles. What I tend to do is try and squeeze as much as possible of the written word into each issue, I am loathe to wield the editor's blue pencil because often you see in other magazines just a skimpy outline of a review that tells you little about a program and which is obviously written to fill a small allocated space. I believe that you are entitled to read as much as the reviewer or author wants to write and if he is sufficiently enthused, or otherwise, to write at length, why not give you the chance to read it? Some of the reviews we have done have been amongst the most comprehensive you will find in the U.K. computer press and will serve as a good reference for the future. One good case in point is John Sweeney's enormous review on Ultima IV (which may yet be squeezed out through lack of space). It is virtually a story in itself and makes good reading from that point of view. I thought long and hard about including it, but if we can make the space, it will be here for you to read or not, as you choose.

One thing that suffers by packing it all in is design in the traditional and classic sense. We don't use a lot of white space and huge headlines, nor do we often have half page illustrations (and never full pages) and from a design point of view I do regret it. But you can't have everything and with a two month wait between issues, wouldn't you rather have lots to read than be knocked out by some stunning design?

On the subject of reviews and the summer, Jim Short is taking a short rest due, in great degree, to a lack of 8-bit software sent in for review. We are swamped with ST software but no 8-bit games. Software companies where are you!!!!

Enough reflecting. Let's put this issue to bed and get ready for the PCW Show. Hope to see you there, it looks like it's going to be good.

NO MORE DATABYTE

Due to a dispute over payment for their colour ad which appeared back in Issue 20, it looks like we will be unable to bring you reviews of Databyte's products in the future. I am saddened by this as they are releasing some excellent products which we would love to review. I am doubly saddened because I used to have long conversions with them last year about how badly the 'big boys' treated Atari owners and the smaller companies, and about how we need to support each other for the benefit of all. It seems that the bigger you get the less you need to care. Hopefully that is not so and maybe by the next issue I can report better news.

Robico Software

3 Fairland Close, Llantrisant, Mid Glamorgan. CF7 8QH Tel (0443) 227354

ATARI XE/XL

Activision

TITLE	Cass.	Disc
Ball Blazer	8.30	12.50
Decathlon	8.30	
Eidolon		12.50
Ghostbusters		12.50
Gt.American Rd.Race	8.30	12.50
Hacker	8.30	12.50
HERO (Rom)	15.00	
Koronis Rift		12.50
Pitfall 2	8.30	
Rescue On Fractulus	8.30	12.50
Space Shuttle	8.30	

Anirog Software

TITLE	Cass.	Disc
Jump Jet	8.30	9.85

Ariolasoft

TITLE	Cass.	Disc
Archon	9.30	12.50
Archon 2	8.30	10.50
Axis Assassin	6.55	8.30
D-Bug	6.55	8.30
Hard Hat Mack	8.30	10.50
Movie Maker		13.80
MULE	9.30	12.50
Murder On Zinderneuf		12.50
Music Construction		12.50
New Paperclip		39.95
One On One	8.30	10.50
Pinball Construction		12.50
Realm Impossibility		10.50
Seven Cities Of Gold		12.50
Sky Fox	8.30	10.50

Big Five

TITLE	Cass.	Disc
Bounty Bob	8.30	

CDS

TITLE	Cass.	Disc
Steve Davies Snooker	8.30	10.50

Datamost

TITLE	Cass.	Disc
Mr. Robot		10.50

Datasoft

TITLE	Cass.	Disc
Alternate Reality		17.95
Bruce Lee	12.50	12.50
Conan		12.50
Dig Dug	8.30	
Elevator Action	8.30	12.50
Goonies	8.30	12.50
Pole Position	8.30	12.50
Pole Position 2	8.30	12.50
Zaxxon	12.50	
Zorro	8.30	12.50

Digital Integration

TITLE	Cass.	Disc
Fighter Pilot	8.30	10.50

Draper

TITLE	Cass.	Disc
Draper Pascal		45.00

Electric Dreams

TITLE	Cass.	Disc
Spy's Demise	8.30	10.50

Elite

TITLE	Cass.	Disc
Airwolf	8.30	

English Software

TITLE	Cass.	Disc
Collosus Chess 3.0	8.30	10.50
Elektraglide	7.30	10.50
Graphics Wizard	8.30	
Mediator	7.30	10.50
Smash Hits 1	8.30	10.50
Smash Hits 2	8.30	10.50
Smash Hits 3	8.30	10.50
Smash Hits 4	8.30	10.50

Firebird

TITLE	Cass.	Disc
Chimera	3.60	
Thunderbirds	3.60	

First Star

TITLE	Cass.	Disc
Boulderdash	8.30	12.50
Boulderdash 2	8.30	12.50
Spy V Spy 2	8.30	12.50

Gremlin

TITLE	Cass.	Disc
King Of The Rings	8.30	10.50
Zone X	8.30	10.50

Infocom

TITLE	Cass.	Disc
Deadline		17.60
Hitch Hiker's Guide		21.60
Planetfall		17.60
Seastalker		17.60
Zork 1		17.60

Level 9

TITLE	Cass.	Disc
Adventure Quest	8.30	
Colossal Adventure	8.30	
Dungeon Adventure	8.30	
Emerald Isle	5.85	
Lords Of Time	8.30	
Red Moon	5.85	
Return To Eden	8.30	
Snowball	8.30	
Worm In Paradise	8.30	

Llamasoft

TITLE	Cass.	Disc
Mutant Camels	6.30	
Colourspace	6.30	
Grid Runner	5.00	
Hover Bovver	6.30	

Mastertronic

TITLE	Cass.	Disc
Action Biker	1.98	
One Man & His Droid	1.98	

Microprose

TITLE	Cass.	Disc
F15 Strike Eagle	12.50	12.50
Kennedy Approach	12.50	12.50
NATO Commander	8.30	12.50
Solo Flight	12.50	12.50

Mosaic

TITLE	Cass.	Disc
Adrian Mole	8.30	

Novagen

TITLE	Cass.	Disc
Encounter	8.30	10.50
Mercenary	8.30	10.50

P.S.S.

TITLE	Cass.	Disc
Theatre Europe	8.30	

Precision

TITLE	Cass.	Disc
Superscript		56.00
Supertype		22.00

Robico Software

COMING SOON!

TITLE	Cass.	Disc
Enthar Seven		17.95
Island of Xaan		14.95
Project Thesius		14.95
Rick Hanson		14.95

Screenplay

TITLE	Cass.	Disc
Asylum	8.30	12.50

Sega

TITLE	Cass.	Disc
Spy Hunter	8.30	12.50
Tapper	8.30	12.50
Up 'n' Down	8.30	12.50

Sierra On-Line

TITLE	Cass.	Disc
Jawbreaker		12.50
Marauder		12.50
Threshold		12.50
Wall War		16.00

Strategic Sims

TITLE	Cass.	Disc
Battle For Normandy	12.50	12.50
Crusade In Europe	16.00	16.00
Knights Of Desert	12.50	12.50
Tigers In The Snow	12.50	12.50

Sublogic

TITLE	Cass.	Disc
Flight Simulator 2		37.99

Synsoft

TITLE	Cass.	Disc
Blue Max	8.30	12.50
Blue Max 2001	8.30	12.50
Fort Apocalypse	8.30	12.50
Quasimodo	8.30	
Super Zaxxon	8.30	12.50

UTILITIES

Assembler Editor (Rom)	17.95
Basic Cartridge (B)	8.95
Basic Cartridge (C)	13.96
DOS 2.0s (Disc)	8.95
DOS 2.5 (Disc)	2.95
Logo (Rom)	55.95
Macro Assembler (Disc)	17.95
Microsoft Basic (Disc)	17.95
Microsoft Basic 2 (Rom)	35.95
Pilot Consumer (Rom)	17.95
Pilot Educator (Rom)	26.95
Translator (XL/XE) (Disc)	6.50

8-BIT HARDWARE

130XE Computer	125.00
130XE + XC11 Cassette	159.00
130XE + 1050 Disc Drive	249.95
XC11 Cassette Recorder	34.00
1020 Colour Printer	125.00
1027 L.Q. Printer	125.00
1029 D.M. Printer	125.00
1050 Disc Drive	125.00
14" Colour Monitor	190.00
14" Colour TV/Monitor	220.00
Monitor Cable (for above)	7.95
MP165 D.M. Printer	229.95
Touch Tablet	29.95
Trak Ball	8.95
Atari Joystick	7.95
Atari Paddles	9.95
Competition Pro Joystick	16.95
Quick Shot 2 Joystick	7.95
Joy Sensor Joystick	17.95
Vulcan Gunshot 2	8.95
Super Controller	9.95
The Stick	11.95
Disc Notcher	7.95

DISCS

MEMOREX

10 SS/DD 5¼" Discs	15.95
10 DS/DD 5¼" Discs	19.95

CASSETTES

MEMOREX

10 C15 Computer Cassettes	6.95

BOOKS

De Re Atari	16.00
Mapping The Atari	15.95
Watson's Notes (State 1-5)	2.50
130XE (XL) Machine Language	6.95
Computer Animation Primer	18.95
Your Atari Computer	18.95

ST

Abacus

TITLE	Disc Price
PC Board Designer	356.00

Academy

TITLE	Disc Price
Typing Tutor	32.00

Accolade

TITLE	Disc Price
Sundog - The Frozen Legacy	36.95

Activision

TITLE	Disc Price
Borrowed Time	21.99
Hacker	21.99
Mindshadow	21.99
Music Studio (MIDI)	26.99

Antic

TITLE	Disc Price
C.O.L.R. Object Editor	26.95
Maps & Legends	31.95

B.I.

TITLE	Disc Price
Degas	36.95

Bayview

TITLE	Disc Price
Word For Word	36.95

Cashlink

TITLE	Disc Price
Cashlink ST Accounts	311.95

Electronic Arts

TITLE	Disc Price
Financial Cook Book	46.95

GST

TITLE	Disc Price
GST.ASM	36.95
GST.C	55.95
GST.EDIT	21.95

Haba

TITLE	Disc Price
Haba Dex	55.95
Haba Hippo C	69.95
Haba Letters	45.95
Haba Merge	36.95
Haba View	69.95
Haba Writer	69.95

Hippo

TITLE	Disc Price
Hippo Backgammon	36.95
Hippo Concept	84.95
Hippo Disc Utilities	45.95
Hippo Pixel	36.95
Hippo Spell	36.95

Infocom

TITLE	Disc Price
A Mind Forever Voyaging	40.00
Bally Hoo	24.95
Cutthroats	36.95
Deadline	20.00
Enchanter	20.00
Hitch Hiker's Guide	24.95
Infidel	40.00
Planetfall	20.00
Seastalker	20.00
Sorceror	20.00
Spellbreaker	24.95
Suspect	40.00
Suspended	20.00
Wishbringer	24.95
Witness	36.95
Zork I	20.00
Zork II	20.00
Zork III	20.00
Infocom Hint Books (each)	6.95

Kuma

TITLE	Disc Price
K-Comm	45.00
K-RAM	26.95
K-Seka	45.00
K-Spread	45.00

Lasersoft

TITLE	Disc Price
Laserbase	89.95
Power-Pak Address Book	17.95
Power-Pak Database	26.95
Power-Pak Diary	26.95

Llamasoft

TITLE	Disc Price
Colourspace	17.95

Mark of Unicorn

TITLE	Disc Price
Final Word	139.95
Hex	36.95
PC Intercomm	118.00

Metacomco

TITLE	Disc Price
Lattice C Compiler	89.95
Macro Assembler	45.00
Pascal Compiler	85.00

Microdeal

TITLE	Disc Price
BBS	26.95
Calendar	17.95
Disk Help	26.95
DFT	26.95
DOS Shell	26.95
Flip Side	17.95
Lands Of Havoc	17.95
M/Copy	45.00
M/Disk (RAM Disk)	11.95
Michtron Utilities	36.95
Mi/Term	26.95
Mud Pies	17.95
Soft-Spool	11.95
Time Bandit	26.95

Migraph Inc

TITLE	Disc Price
Easy Draw	139.95

Mirage

TITLE	Disc Price
Express	45.00

Omnitrend

TITLE	Disc Price
Universe II	64.95

OSS

TITLE	Disc Price
Personal Pascal	69.95

Other Valley

TITLE	Disc Price
Delta Patrol	21.95
Monkey Business	21.95

Paperlogic

TITLE	Disc Price
ST Toolbox	26.95

Paradox

TITLE	Disc Price
Desk Diary	54.95
Mission Mouse	17.95

Psygnosis

TITLE	Disc Price
Brataccas	31.95

Rainbird

TITLE	Disc Price
The Pawn	21.95

Regent Software

TITLE	Disc Price
Regent Spell	45.00
Regent Word	45.00

Talent

TITLE	Disc Price
Zkul & West	21.95
RAM Disc & Spooler	21.95

Telarium

TITLE	Disc Price
Amazon	45.00
Fahrenheit 451	45.00
Nine Princes In Amber	45.00
Perry Mason Murder	45.00

Unison

TITLE	Disc Price
Art Gallery	26.95
Print Master	26.95

ST HARDWARE

520 ST-M	389.95
520 ST-M+ (1024K RAM)	489.95
3½" 500K ST Disc Drive	145.95
3½" 1000K ST Disc Drive	195.95
20 Megabyte ST Hard Disc	829.95
12" High Res Mono Monitor	145.95
14" Med Res Col. Monitor	395.00
14" Low Res Col. Monitor	295.00
80cps ST D.M. Printer	199.95
MP165 D.M. Printer	260.00
Monitor Stand	28.95
Printer Stand	23.95
FIDELITY MONITORS	
14" Colour Monitor	190.00
14" Colour TV/Monitor	220.00
Monitor Cable (for above)	19.95

DISCS

MEMOREX

10 SS/DD 500K 3½" Discs	28.00
10 DS/DD 1000K 3½" Discs	47.00

2 BIT EXTRAS

2 Bit Systems are to extend their range of musical hardware add-ons for the Atari with a new MIDI interface and a hardware Drumkit. The latter is entitled Percussion Master and will be available for 48k or 64k machines. The comprehensive array of built in drum sounds can be supplemented by your own samples from the company's Replay system. The entire range of products will also be available shortly for the ST.

NEW ADVENTURES

Atari Adventurers are in for a treat this year as Robico Software convert their best-selling BBC adventures to the Atari XL/XE machines. These text adventures will not be just straight conversions but will be enhanced to take advantage of the Atari's capabilities. The first release will be RICK HANSON, part of a trilogy, which will have ten more locations added to make a total of 230, a few extra problems and 'a vast amount of text'. The parser can handle full sentences and multiple statements of the nature 'Fill the bottle with water, get the blue book, the book with the red cover and the yellow book and examine all the books apart from the red one'. Wow!

The Atari version is being converted by Nick Gregory using a customised version of The Slave, an adventure writing utility available separately, and Robico are confident that the program will be first class.

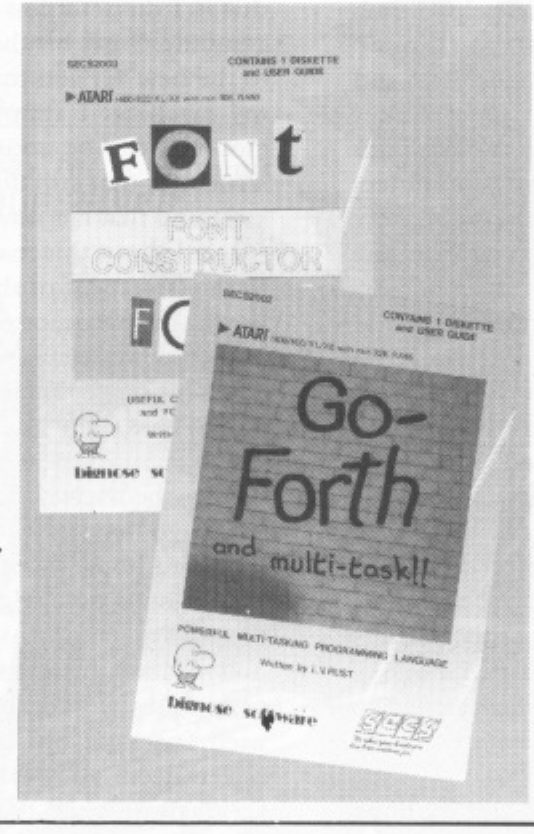
Other titles to follow are Project Thesius, Island of Xaan and the 'mega-adventure' Enthar Seven. All titles will be available only on disk retailing at £14.95. Enthar Seven will be £17.95.



TWO FROM S.E.C.S.

Software company S.E.C.S. have released the first two titles in their planned range of Atari software. The first is a true multi-tasking Forth language entitled Go-Forth which comes on disk complete with a 70 page manual at £24.99. The user of Go-Forth can write programs for commercial use without need for a run time license and indeed S.E.C.S. encourage users to write commercial software with this package. They will even assist in putting the right software onto the market.

The other release is Font Constructor, written with the aid of Go-Forth, which enables programmers to design and edit character sets to include animation. Font Constructor is also on disk at the low price of £6.99.



MORE BUDGET TITLES

Blue Ribbon have reduced the prices of their existing titles to £1.99 and have introduced five new Atari titles – Nightmare Maze, Screwball, Darts, Diamond Mine and Castle Assault. These new titles on cassette cost just £1.99 and all five games are available on one game disk at £9.95.

ITS NOT ALL ST!

At the CES show in Chicago last June several companies set out to prove that publicity and interest in the ST has not diminished the interest in the 8-bit machines and, as predicted in our recent editorial, several companies who came into the market with ST products are now planning 8-bit releases. Among these is Haba Arrays who have a financial planning package entitled Get Rich. Artworx have re-released their Bridge program and have a new release entitled Peggammon. Softsync have another financial program called Personal Accountant and several companies have new educational programs, some of which may only be suitable for the American market. Among these are Spinnaker, and Britannica Learning. Several companies showed hardware add-ons and there are developments in the area of enhancing the 8-bit machines with a mouse from one company and GEM-like windows from another. There were many other 8-bit products on show. Who said 8-bit was dead?

ARIOLASOFT

Recently released from Ariolasoft is Lapis Philosophorum, a graphic adventure featuring 83 screens, 'superb' graphics and multi-tasking. You must go in search of the Philosopher's stone to save your dying King. On disk only at £14.95.

STAYING TOGETHER?

Once, several years ago, I saw an advertisement for a new computer with lots of memory (48K), four sound channels, onboard disk drive/printer interface, and more colours than I could ever imagine in a computer. After costing a DIY motherboard and all the necessary add on utility boards of another computer, this new one seemed expensive. However, it did have a little brother with only 16K but all the capabilities of the bigger model. This was the one I was to buy as my first ever computer.

In the ensuing months, I was to hunt in vain for articles in magazines relating to my machine. To be fair, computer magazines were in their infancy then. I did strike lucky by buying the first edition of an American magazine which was dedicated 100% to my computer. I can remember those halcyon days when everyone was a beginner and helped each other over the difficult bits.

The Americans took to the computer with open arms and the market leaders at that time began to worry. Over here it was a different story. None of the computer magazines wanted to know about it. They pushed all other computers but mine. I was fortunate in a way. At the same time there appeared what seemed to be a far superior machine from DAI which quickly disappeared without trace. It had no baby brother so I could not afford it, and I stuck with my computer.

Strangely enough, all the flak from the U.K. press brought us owners more and more together as a family. A club member from the midlands finally started up a U.K. magazine. He was dedicated to both the computer and the magazine which you will realise if you read the magazine. Now, with our own magazine, we did not care about the nationals not writing about 'Our Computer'. At the same time, fate struck a bitter blow. Bad management, poor advertising resulting in low market sales, a downturn in the sale of computers generally and other minor adversities seemed to bring the manufacturer to his knees. Rumour was rife that we were to see the end of our much beloved machines.

This only brought us even closer together, and we hung on to other rumours about cheaper chips, a new and better machine, change of management, you name it , we believed! I do not think that we would have believed what was to eventually happen to the management if we had been told. That the directors of our most ardent rival would have nothing to do with new ideas from the creator of their business, that he would leave them and take over our firm? Surely not!

Crazy or not it happened. This man was strong enough to disregard the laughter and lambasting from the press about his new business. After all, he saw it from a competitor's angle and realised the potential. He then stood on the heights and told all about the unbelievable power and low price of a new generation of machines that he was to bring out. Again the snide remarks from the press (noticeably in the U.K.). How can this man compete against the overwhelming sales of the market standard 'Big Blue'? In fact, looking back, he was to do for the sixteen-bit machines what Sir Clive Sinclair did for U.K. home computers in general, i.e. sell a machine at an affordable price and force the competitors to rethink their own over-inflated prices. We are the owners who are now talked about and not talked down to! We are the ones who are going places at last. But glory is not won at a cheap price.

All of our eight-bit models will run the same software, but sixteen-bit is another world. Our happy family now seems to be dividing itself into two camps. I notice this in readers' letters published in the American magazine that I still subscribe to. Complaints about a magazine within a magazine, less eight-bit articles (even though the magazine is thicker than ever and the number of eight-bit articles remain the same!) and a general feeling of being left on the shelf. Why this is I do not know. I never felt any animosity towards my computer's big brother, nor its replacement and certainly not to the new version that has almost three times the memory of my machine. I suppose that, having bought the sixteen-bit model, I can be accused of having the best of both worlds. True, but that still does not help me understand this disturbing trend that has now appeared. Certainly everything is newfangled about this machine and it is much publicised, but not to the detriment of the eight-bit models. Our new owner has promised to support existing models and is pressing software houses who have never done so in the past to write for the eight-bit range. He is even supporting the VCS!

When such internecine squabbles occur it is only the users themselves who come out worst and they can only blame themselves for such shortsightedness. They knew years ago that sixteen-bit was the future, only memory prices hindered home ownership. Now it is within their grasp and they should be using their existing machines to learn about the new generation. Believe it or not, a lot of software is downloaded from mainframes to the sixteen-bit, and new techniques worked out on the sixteen-bit computers can be used for eight-bit computers. Software houses who would never deem to work on these machines are now looking seriously at what, to them, is a new and umplumbed market. We will reap the benefit by being able to buy upmarket programs at a reasonable price and not be stuck with the cheap and nasties that certain other computer owners have to contend with.

Some people complain that when I do start talking I can be quite verbose, so I had better end this diatribe. Suffice to say that those who recognise my name will know that I am dedicated to helping beginners come to grips with their computer, regardless of the model involved.

As a footnote, I have intentionally not mentioned my computer, although you should have recognised it by now. This was done purely because the attitudes arising are not restricted to this computer alone. Users should stick together for the benefit of all.

G.M. Hutchinson.
BAUG Software
PO Box 123
Belfast
BT10 0GL

Readers

EASY FORMATTING

Dear Les,

I have a little comment on Steve Pedler's article 'A Guide To Error Codes'. On Error 162 (Disk Full) he says the only solution is to use the cassette recorder. I have a better solution. By using the following XIO commands with DOS 2.5 in direct mode (Atari BASIC) you can format a disk without going to the DOS menu and still have your program intact.

XIO 254, #1,0,0,"D:" (for enhanced density)
XIO 253, #1,0,0,"D:" (for single density)

A little word of warning, make sure you have inserted a fresh disk before attempting this since it will erase everything on your disk.

I hope that this little tip will be of use to others. It has helped me out of many tricky situations.

Bjorn Deutschmann,
Guernsey

ANOTHER BBS

Dear Editor,

This is just to let you know that yet another Bulletin Board is in operation and I would be most grateful if the information could be publicised in your journal.

Name of System : The System
Transmission rate: 300 baud
Times : 24 hours
Town/County : Nottingham
Phone number : 0602 817919 (ring back)
Sysop : Paul Isaacs

This is not a commercial board and is run on an Atari system. Messages are welcome from all.

P.B.Isaacs,
Nottingham

CHEAP UPGRADES

Dear Sirs,

First let me thank you for Les Ellingham's 'Error 8' program in Issue 21. It helped me debug two games that I've struggled with for the last year. Each simply had a comma at the end of a DATA statement, and how many times had I proofread them!

Now perhaps I can help any readers with 600XL's in their quest to upgrade at a reasonable price. I recently bought a 64k upgrade kit from a place in the States for US$35 and installed it in a friend's 600XL. It now performs exactly like my 800XL and runs everything I can throw at it. The kit consists of two RAM chips to replace two already installed and three jumper wires, two of which require some easy soldering to install. The instructions are very clear and simple and the whole job took less than 30 minutes.

The company will be glad to send through the international mail but payment must be in US dollars such as an International Money Order. The address is Computer Service Land, 1073, W. Broad Street, Falls Church, Virginia 22046, U.S.A.

TSgt Bob Matiska,
RAF Bentwaters,
Suffolk.

RENUMBER POSSIBLE?

Dear Les,

Can anyone tell me how I can get an 800XL to perform the 'renumber' function found on the BBC which I am using at college. Although generally the Atari compares favourably with the BBC, the former's lack of this facility is annoying when attempting to edit and debug programs.

Also I have seen offered a 'single-density' and a 'double-density' second hand 1050 disk drive. What is the difference? Can either run Atariwriter on a 1029?

Ian Hayward,
East Sussex

Some languages such as BASIC XL have a built in renumber feature although this is an expensive way of obtaining the facility unless you want the other features of the language. Several renumber programs have appeared in magazines and in the public domain which work either as an 'add-on' program at the end of your listing or reside in memory to be used by a USR call. There are a few programs on the public domain disks in the PAGE 6 library and many User Groups may have such programs.

There is only one model of the 1050 disk dive which can be used in either single density or enhanced density (not true double density) as you wish. Hardware add-ons can be obtained to use the drive as true double density. There are no restrictions to the type of programs that can be used on this drive.

TELECOMPUTING ILLEGAL?

Dear PAGE 6,

I am very interested in telecomputing but it seems to be forbidden in Belgium. Could you or any reader tell me if it really is?

Fernand Paquet,
Belgium

Most strange! Can anybody throw any light on this?

ASSEMBLER EDITOR PROBLEMS

Dear Les,

Help! How about a future article on the Atari Assembler Editor used with the XC11

DO YOU WANT MORE SOFTWARE?

Dear Les,

My name is John Davison (jnr), my Dad wrote the Flight Simulator II reviews.

I would like to start a campaign for Atari owners. With the help of Page 6 readers I believe that we could get through to software companies and get them to write good software for us. There are a few companies who have written things, like Mastertronic, but they treat us like we own a defunct computer, which we don't!!!

There are some software companies who have treated us very badly, and these are the companies I would like the campaign to be aimed at. Ocean Software and Elite, are the main 'nasties'. At the beginning of 1985 Ocean ran big colour ads with Atari written alongside Commodore, Sinclair and Amstrad. We waited eagerly for Daleys Supertest and Frankie etc. Atari User even had a news article about Ocean!!! We then waited and waited and then gave up. Elite on the other hand actually brought something out, but they might as well not have bothered! 'AIRWOLF' it said in big letters "GREAT! The number 1 top seller" then underneath the big letters it said 'this was originally test marketed under the name 'Blue Thunder' WHAT???? Why did we get Blue Thunder and Commodore, Amstrad, Spectrum, BBC, Electron, C16, Plus 4 and Tatung Einstein owners get the real thing! This infuriated me and I wrote a letter of complaint to the Managing Director, within days I

recorder? I recently purchased an Editor and the manual simply says to CLOAD an object listing into BASIC but this results in an error. Using ENTER 'C:', everything seems to work but on PEEKing 1536, nothing is there. I'm stuck. Also is the G command in Debug mode supposed to execute the machine code as to my simple mind this is what the manual seems to imply?

Cliff Winship

The manual for the Assembler Editor has been wrong for years! I did know the answer to this problem some time ago but it now appears to be lost in the mists of time. It has been fairly well documented so perhaps another reader would care to drop us a line so that we can publish the details and keep a note of the issue for future reference.

Write to READERS WRITE, P.O. BOX 54, STAFFORD, ST16 1DR

1029 PRINTER SUPPORT

Dear Les,

I recently bought a 1029 printer so I could run off Assembly listings and do graphics dumps. Unfortunately I do not feel that I am using the printer to its full potential as I have no idea how to program it for control characters, inverse characters or screen dumps of my favourite games. I have seen this done on other printers and wonder why it is not easily available on an Atari printer.

At the Atari Show I purchased Music Construction Set from Ariolasoft. This is an excellent program that includes the option to print the music score to a printer. However, the program requires you to set up a printer before dumping the screen by typing in a code of some sort. The most infuriating thing is that the manual for the program gives examples for an Epson printer but not for the 1029! Does anyone know this secret code or indeed know anything useful about this printer?

Tim Eyles,
Basingstoke.

We now have a few articles and programs about the 1029 which only need to be checked through before we can publish them. They should throw some light on the subject.

One of the problems with the 1029 is that it only uses a print head matrix of 7×5 whereas most other (and more expensive) printers have a 9×9 matrix. Whilst the 1029 can print graphics it is not possible to simply use a routine designed for another printer, a custom program has to be written. The other problem is that most of the commercial software that includes facilities for screen dumps is written in America where the 1029 printer was either not sold or was sold in very limited quantity. As a result most companies do not bother to include a 1029 option in their programs thinking that the demand would not be worth the effort. The 1029 can be used more extensively and we hope to begin publishing some programs in the next issue.

received a reply saying that they would be bringing out 'Paperboy' for the Atari at the end of June, they better have not been lying or they'll get another letter!!!

If you see any software that you think should be out on the ATARI, write to the Manager of that company and say you want it. We are no longer a minority group, there are a lot of Atari owners about now. A campaign such as this worked very well in the USA and Antic readers managed to get BRODERBUND software to bring out Lode Runners Rescue and Championship Lode Runner. They also got 'Farenheit 451' from another company.

This campaign should not only apply to games. Utilities and word processors, anything you want! If you want it, write and ask for it!!

I believe if we all write at least one letter we could get the software companies thinking, so go to it, WRITE!.

John Davison jnr.,
Sandy, Beds.

I would love to see such a campaign work but I suspect that the more subdued British Atari users would not take to letter writing campaigns with as much fervour as the Americans. Still, it could be done. It will take a lot of work but, as John says, start with just one letter. Start by writing to the Managing Director of Ocean Software Ltd. at 6, Central Street, Manchester, M2 5NS. tell him you want Ocean software for the Atari and ask him to send details of future Atari releases to PAGE 6. If he receives several thousand letters in the next couple of weeks, it must have some effect? We'll let you know if it does.

LONG LINES

Dear Sir,

I recently bought my son an 800XL and he loves typing in the programs from PAGE 6.

The reason for writing is that I managed to get hold of some back issues of PAGE 6 and we are having a problem with House of Secrets from Issue 10. Is it possible to let me have, or better still print, the TYPO 3 codes for that and older listings? Also, sometimes when my son is typing in a certain line, before he gets to the end of the line there is a beep from the computer and when he presses RETURN he gets an error code and the end of the line is missing. He can cure this by missing out all the spaces but when he presses RETURN the computer puts them all back again. Why?

M.E.Bradwell,
Grimsby.

The early issues of PAGE 6 used TYPO 2 for error checking and you will find a table of codes for the programs in each issue. The original TYPO 2 program was published in Issue 5 which is now out of print but we will happily send a copy of the program to anyone who sends in a s.a.e. We do intend at some stage to produce TYPO 3 codes for all of the programs in past issues but it is one of those projects that will take a considerable time and keeps getting put off when more important things crop up. Hopefully one day we will publish some sort of supplement.

The reason the Atari beeps at you when you have typed in a lot of information is to warn you that you are coming near to the maximum amount of characters that you can type on one line. You are allowed only three physical lines on screen for each program line although internally the computer can accept longer lines. There are several ways to squeeze more information onto a line. One, as you suggest, is to leave out spaces. Another is to use abbreviations for BASIC words, check your manual or Mark Hutchinson's A-Z OF BASIC published in PAGE 6 a while ago. A third way is to type POKE 82,0 and press RETURN before you start typing. As you enter each line the Atari checks it before accepting it as part of the program. It can recognise legal abbreviations and missing spaces and will automatically correct these for you but when it finds something that it does not recognise, it will tell you so in the form of an error message. The syntax checking on the Atari is one of the very best but it can only check to see if input is legal as defined by BASIC. It cannot check for all characters that are typed incorrectly which is why the TYPO programs where developed.

XREF

Find all your variables

by Brian Smith

```
EI 1 REM ******************************
LJ 2 REM *          XREF              *
UK 3 REM *      by Brian Smith        *
EB 4 REM * -------------------------- *
IY 5 REM *  PAGE 6 MAGAZINE - ENGLAND *
EN 6 REM ******************************
NM 7 REM
IT 10 REM A Cross-Reference Utility for
KB 20 REM Atari BASIC Rev A or Rev C.
BA 30 REM
BS 40 REM N.B. This utility uses some
ZP 50 REM routines within the BASIC ROM
WN 60 REM and is probably not suitable
HM 70 REM for use with the Rev B BASIC.
BF 80 REM
JG 300 PRINT :PRINT "SETTING UP XREF..."
YR 310 DIM A$(28):TRAP 600
FK 320 RESTORE :ADDR=1536
TJ 330 READ A$:FOR X=1 TO LEN(A$)/2
GE 340 A=ASC(A$(X*2-1)):B=ASC(A$(X*2))
FI 350 HI=(A-48)-(A>64)*7
IN 360 LO=(B-48)-(B>64)*7
SK 370 POKE ADDR,HI*16+LO:ADDR=ADDR+1
NI 380 NEXT X:IF ADDR<1789 THEN 330
AG 390 READ X:IF X<>-1 THEN 600
SD 400 IF PEEK(43234)=234 THEN 430
BL 410 FOR A=1 TO 10:READ ADDR,X
XH 420 POKE ADDR,X:NEXT A
VW 430 PRINT :PRINT "...FINISHED!":END
EB 600 PRINT :PRINT "* ERROR IN DATA *"
NX 610 END
KD 700 DATA A20168F003AA686885E0CAF00A68
PV 710 DATA 6885B5CAF0034C34B92079BDA97F
HC 720 DATA 85CFA682A483D03886D084D1A0FF
IY 730 DATA C8B1D010FBC89848A5E0C9029004
DQ 740 DATA C5CFD016A4D1207406A2F1A00620
CL 750 DATA 7406A6CFA000207B06208506A4D1
JX 760 DATA 186865D0AA9001C8E6CFC485D0C2
TC 770 DATA E484D0BE4C5BBDA915206FB62079
PB 780 DATA BD4C79BD869584964C67B586D484
AK 790 DATA D52093B94C79BDA5E0D00160A688
TT 800 DATA A48986CB84CCA000B1CB85D4C8B1
NH 810 DATA CB85D530CAC8B1CB85CDC8B1CB85
VV 820 DATA CEC8B1CBC8C9029033C937B02FB1
KY 830 DATA CBC5CFF01FC910B010C90ED00698
ZS 840 DATA 186906D005C8981871CBA8C8C4CE
PE 850 DATA 90E1C4CD90CDB00AA2A7A0B92074
RW 860 DATA 06207F0618A5CD65CB85CB90A5E6
UL 870 DATA CCB0A1203D207661726961626C65
RB 880 DATA A0,-1,1557,64,1560,110,1639
EB 890 DATA 114,1644,61,1647,110,1650
ZI 900 DATA 110,1657,53,1664,156,1667
SI 910 DATA 110,1755,177
```

If you have ever tried to modify a BASIC program from a magazine (or even one of your own!) then you know how useful it is to have a list of which variables have been used and where they are used. This machine code utility fits into page 6 and does both tasks at high speed. It was developed from a BASIC program given in the ATARI BASIC SOURCE BOOK (Compute! Publications).

The BASIC program below POKEs the code for the utility into page 6 and will work with either Revision A or Revision C BASIC ROMs. Once the code is in place, any BASIC program can be loaded and a simple USR call used to generate a cross reference (or XREF) listing. The utility can operate in three modes and can send output to the screen, a printer or a disk file.

FULL CROSS REFERENCE MODE

To produce a list of every variable name currently held by BASIC together with a list of the line numbers where these names are used enter an immediate mode USR call (i.e. don't use a line number) like:

X = USR (1536,1)

where 1536 is the start address of the utility and the '1' selects full XREF mode. This will output the full XREF to the screen. Use Control-1 to pause and restart the listing otherwise it will scroll past too fast for it to be read!

NAMES ONLY MODE

To produce just a list of the names of all the variables use a USR like:

X = USR (1536,0)
or X = USR (1536)

These two commands have the same effect, the names are listed to the screen, one per line. Each name is followed by its 'variable number' which is allocated by BASIC. This number, which is in the range 128 to 255, can be used in the following mode.

SINGLE VARIABLE CROSS REFERENCE MODE

This mode is called up by a USR call like:

X = USR (1536,NUMBER)

where NUMBER is the variable number of the required variable (use 'Names Only' Mode to find the number of the variable of interest). This command will list on the screen the name of the specified variable followed by the numbers of all the lines which refer to this variable. For example, X=USR(1536,128) will list all references to the first name shown in a 'Names Only' listing.

SENDING OUTPUT TO PRINTER OR DISK

It is quite easy to switch the XREF output to a printer or a disk file. In order to keep the size of the utility below 256 bytes (so it could fit into page 6) a channel to the appropriate device has to be opened before XREF is called. When XREF is called, it is given an extra parameter which identifies the channel to be used. For example to use a printer use commands like:

```
OPEN #4,8,0,"P:"
X = USR (1536,0,4)
```

to send a names only listing to a printer. Once the channel is open, subsequent XREF calls can be made, e.g.:

```
OPEN #4,8,0,"P:"
X = USR (1536,0,4)
X = USR (1536,128,4)
X = USR (1536,150,4)
CLOSE #4
```

To use a disk file instead of a printer simply change the OPEN command.

ERROR MESSAGES

XREF has one error message, ERROR 0, which means too many parameters have been supplied. In addition to this, the normal I/O error messages may be generated by BASIC, e.g. if the USR call specifies channel 3 for output when that channel is closed then ERROR 133 will be produced.

To stop the XREF output, e.g. if a full XREF was requested by accident, press the BREAK key (there may be a short delay before the STOPPED message appears).

Note that XREF can show when it is time to clean up the Variable Name Table. If XREF does not list any line numbers for a variable then either the lines which referred to it have been deleted or else some immediate mode commands have used it. These 'unused' variables take up space which can be reclaimed by LISTing the BASIC program to disk (or tape), typing NEW to clear out the old program and then ENTERing the program from disk (or tape). ●

14. MINDSHADOW

Mindshadow is a relatively new release from Activision which follows the tried and tested format of the good, old-fashioned illustrated text Adventure. It comes on a double-sided disk for the 8-bit Atari's, but I believe it is also available for the ST. I played the 8-bit version, but I have no doubt that the ST version is similar.

The concept of the illustrated Adventure should not be new to long time readers of this column, as I've covered many illustrated Adventures in the past. The basic format was pioneered by Sierra On-Line, but has since been refined by the big name companies like Datasoft, Sirius, Penguin and Broderbund. Improvements have generally been in the areas of graphics, vocabulary and the all important parser. The complexity of the puzzles has never really expanded beyond that of the early games and has certainly not reached the sophistication of some of Infocom's best puzzles. This doesn't mean to say that the games are easy. Some are. Some aren't.

I would personally put Mindshadow in the easy category. It only took me a day to solve, but don't be disheartened if it takes you longer. One reviewer said "the puzzles certainly are tough – I wouldn't have made it through the game without the cheat sheet Activision provided"(Atari Explorer Winter 1986 page 76). I can't understand anyone finding it THAT tough. I guess the degree of difficulty is proportional to your previous Adventuring experience.

The reason I found Mindshadow to be easy was that it was so well written. It's the sort of game that you can slip into very easily. You don't have to wrestle with a poor parser or a limited vocabulary. You feel comfortable within minutes of starting the game. It does a good job of predicting the type of actions the user will try to carry out and it provides plenty of clues. Let me give you a sample transcript from the opening moments of the game. All text provided by the game is in lower case. The prompt is a simple colon. User input is in upper case and my comments are in italics.

You are on a beach with a marvellous and intriguing view of the ocean. You see a hut to the north. You see a shell.
You are presented with a picture of a tropical beach. In addition to the items mentioned, you can also see some palm trees.
:EXAMINE BEACH
You see nothing unusual
:EXAMINE HUT
You see a tiny hut in the distance
Hmm. You decide to get closer as soon as you've examined everything else on the beach.
:EXAMINE SHELL
You see nothing unusual
:GET SHELL THEN EXAMINE IT
A shell taken
It is a colourful shell
The picture is redrawn in a flash, but without the shell.
:LISTEN TO SHELL
You hear Lorne Greene narrating an ocean series
Huh? Is this a hint? Is it even relevant?
:EXAMINE THE OCEAN
Could it be? Yes, a ship is sailing along the horizon
Aha! Already you have an idea of how to escape the island.
:EXAMINE SHIP
The ship is too far away to see clearly
You decide to attract its attention somehow.
:BLOW INTO THE SHELL
You blow till you're blue in the face, but nothing at all happens
Notice how well the program predicts your actions.
:CLIMB TREE
Boy! Those natives make it look easier than it is. How to climb these palm trees is a mystery
:EXAMINE TREES
There are some monkeys playing in the trees
:LOOK AT MONKEYS
The monkeys seem to be enjoying themselves
:GET MONKEY
The monkeys are far too nimble to be caught
Wait a minute! You get a better idea...
:SWIM
Hey! This is great! Warm water, blue sea, mean sharks...sharks?!?!
It seems that the game has ended.
Would you like to try again? (Y/N)
So much for that idea! Next time, you decide to check out the hut...

And so it goes on. The parser is not as sophisticated as (say) Infocom's, but it does allow the inclusion of definite and indefinite articles and some adjectives and prepositions. When these are included, they are generally ignored. Hence LOOK AT THE PALM TREE becomes LOOK TREE. The parser also understands conjunctions (THEN, AND) and at least one pronoun (IT). This allows compound commands such as the one used above – GET SHELL THEN EXAMINE IT.

Other useful commands are GET ALL, DROP ALL, THINK (more about this under 'Game Playing Strategy') and HELP. HELP is a bit unusual. If you type HELP (or any of its variations) or press the HELP key on the XL/XE, then an odd bird called the Condor will sometimes help you. His help is readily available early in the game, but he becomes less generous with his help as the game goes on. Fortunately, you probably won't need his help very often. If you do, you may find that the advantages are outweighed by the disadvantages. Firstly, you will have to flip the disk over to get the help you need. Secondly, you are only allowed three HELPs per Adventure. And thirdly, the help that Condor gives you is sometimes so obscure that it's probably of little or no help anyway! Here's an example:

The Beaked Bird sits high above in his island mountain

by Garry Francis

lair. Turning my head from side to side (to alternate eyes), I peruse the coastal real estate. Land values are up. SHIP SIGHTINGS are way up. Get down to where you woke up, Crusoe; it's a choice lot, 10% down, lease-to-buy, 30-year balloon payment.

Does that make sense to you? If it does, then you'll enjoy reading the rest of the hints! Here's an interesting exercise. When you've finished the game, play it again from the start, but this time, your aim is to read all the help screens. In doing so, you will have to work out what conditions cause the help screens to change. For example, will the help screen change if you are carrying the shell? (Answer: No.) I found about nine screens of help. See if you can do better. (Hint: Type QUICKSAVE before HELP, then do a QUICKLOAD immediately afterwards. In this way, you can see more than three screens per game.)

Mindshadow allows you to save up to seven different games numbered 0-6 by using SAVE GAME. These may be restored using LOAD GAME. This was one thing that really bugged me. Why can't all software houses use the same commands for carrying out the same functions in an Adventure? What's wrong with the simple and established standard – SAVE and RESTORE? Perhaps we should get the International Standards Organisation onto this...

The QUICKSAVE and QUICKLOAD commands mentioned above are a quicker way to save a game without having to assign a number to it. Very useful. Regardless of whether you use SAVE GAME or QUICKSAVE, the data is stored on side B of the disk. If you are worried about writing to your master disk (as I am), then you can probably use a sector copier to make a backup of side B only. I know I made a copy of mine and I don't remember encountering any problems. Side A, however, is copy protected, so don't bother trying to copy it unless you've got one of those fancy disk drive modifications. Needless to say, you can only make a backup for your own personal use. Selling or giving away copies is a criminal offense.

Mindshadow contains one unique feature that I haven't encountered in an Adventure before, and that's softkeys (or function keys as Activision calls them). If you press SHIFT and a number from 1 to 8, then a whole command is printed on screen ready for you to press RETURN. For example, SHIFT-1 is SAVE A GAME, SHIFT-3 repeats the last command and SHIFT-7 is QUICKSAVE. I didn't find these very useful, because by the time you look them up in the instructions, you could have typed the whole command for yourself. However, what WOULD be useful in future would be macros. Macros allow you to define your own softkeys. For example, I could define CTRL-D for DROP, CTRL-E for EXAMINE, CTRL-S for SAVE and so on, whereas someone else might prefer CTRL-D for DIG, CTRL-E for ENTER and CTRL-S for...well, who knows?

A Few Bugs

Despite my generally favourable impressions of Mindshadow, there are quite a few bugs and/or design flaws which I feel you should know about. The one that stands out most in my mind is a rather nasty bug in Luxembourg which actually works to the player's advantage. If you wear a certain item, the program appears to set an internal flag. However, if you drop the item, the flag is not cleared and the program thinks you're still wearing it. When you enter a certain room later in the game, the item you're wearing (which, of course, you are no longer wearing) saves you from certain death! Strange.

Another interesting bug was in the GET ALL and DROP ALL routines. I found myself getting and dropping items that I'd never even seen! Try it.

Talking about bugs, the review of Mindshadow in Antic January 1986 page 42 mentioned a bug whereby the program crashed if you forgot to flip the disk at one point in the game. This bug has apparently been eliminated. I tried all sorts of combinations of having the wrong side of the disk in at the wrong times and the program merely told me to insert the correct side.

Graphics

At last we come to the graphics – and very nice they are too! Mindshadow's graphics are fairly typical of the genre. The bulk of the screen is used for pictures of the various locations in the game and the remaining four-line text window is used for user input and the program's responses. The picture can be toggled on and off by pressing RETURN on an empty input line. Every time you enter a new location, a new set of picture instructions is loaded from the disk. Once the new instructions are in memory, the old picture is erased and the new picture is drawn. This whole process is very fast.

The quality of the drawings is very good apart from an occasional glitch in the fill routine. In fact, the pictures have a sort of cartoon feel to them, especially those with people in the scene. However, the one thing that really impressed me was the colours. The selection of colours is fantastic! I particularly liked the bright greens and blues on the tropical island. This makes it a real thrill every time you discover a new location – and with over 80 locations, you're in for a lot of thrills.

As though all that's not enough, a few locations have been spiced up with some animation. The bits I liked were the birds flying over the second beach and the pirate ship, the shark at the London docks and the snoring man in the alley.

Game Playing Strategy

Now, let's take an abrupt change of direction and get on to the game itself. The following section includes some game playing strategies, so don't read any further if you're worried about making the game easier than the designers intended.

Once you've booted the game, progressed through all the obligatory title screens and eventually flipped the disk to side B, you'll find yourself standing on the beach of a tropical island. You are apparently suffering from amnesia and do not know who you are, where you are or how you got there. The aim of the game is to find your identity. In doing so, you will pass through four regions – the island, a pirate ship, London and Luxembourg.

The first three regions are entirely independent. Each has its own series of puzzles and all the objects necessary to solve the puzzles are found within the relevant region. You might like to think of these as mini-Adventures in their own right. In the first region, your aim is to escape from the island. This was probably my favourite because of the colourful graphics, the clever intertwining of the puzzles and the novelty of a new game. In the second region, your aim is to get off the ship – not surprising once you've seen the crew. In the third region, your aim is to get a plane ticket to take you from London to Luxembourg, although you don't know why.

You'll note that the aim in all three regions is essentially the same, i.e. solve all the puzzles to allow you to progress to the next region. However, there is a further aim common to

HINTS overleaf

all three, but possibly not obvious until later in the game. You must find an object in each of the three regions that will somehow help you solve the puzzles in the fourth and final region. Once you know this, the respective objects will probably be obvious because of their uselessness in the region that they are found.

Examine everything...and that includes items in the pictures that aren't mentioned in the text. I know I say this all the time, but it's amazing how often people get stuck because they haven't examined something. Every object has a use, so hang onto it until its use is found. On the other hand, don't worry too much about THINK. The instructions overemphasize its importance. You can only think about people or places and you won't discover any of these until London and Luxembourg. When a person or place is mentioned, then by all means think, but otherwise don't worry.

Once you have found all the objects and solved all the puzzles in any given region, there is no need to return to it. In fact, you CANNOT return to the island or the pirate ship, so save a game just before leaving these regions in case you find that you've forgotten something.

Sooner or later, you will find yourself in Luxembourg. If you've solved all the earlier problems and brought along the objects mentioned above, you will be able to solve all the puzzles in this region and ultimately find your identity.

Hints

Activision offers a hint sheet for US$1.00. I don't know the best way to send a small amount of money overseas or how they would respond to your request, but it's certainly worth a try. Details are in the instructions packaged with the game.

Alternatively, you can always rely on yours truly. The usual coded hints are at the end of this article. Just look for the area where you're stuck in the list of questions, then match the numbers for that question with the words in the accompanying list to create a hint.

Summary

Well, that about wraps it up for Mindshadow. I found the game to be very easy, yet satisfying and hence would have no hesitation in recommending it for beginners. The parser is good, the vocabulary is good, the puzzles are good and everything's logical. It's also got pretty good graphics.

Other published reviews haven't been as favourable towards Mindshadow as I have, so maybe it's not everybody's cup of tea. You might want to try it before you buy it, but for my money, it's highly recommended.

Next Issue

Next issue I'll have a full rundown on The Slave. Is it as good as the advertisements imply? Tune in next issue to find out!

In the meantime, I can be contacted at the address below if you have any comments or suggestions for the column. Note that this is a different address to that published previously. Please include a couple of International Reply Coupons if you expect a reply and please restrict yourself to Adventure chit chat. It's amazing some of the things I've been asked in the past, but rarely anything about Adventures! See you next issue.

Garry Francis, 26 Baringa Road, Earlwood, N.S.W., Australia 2206

Garry Francis' [redacted]

ADVENTURE HINTS

MINDSHADOW

The Island:

1. Can't get off the island?
21 64 61 24 87

2. Missing fuel?
81 69 42 4 17 5 51 32 57

3. Missing a book of matches?
65 43 39 57 36 88 12

4. Missing steel?
81 38 48 58 60

5. Missing a rock?
92 62

6. Can't get down the cliff?
49 76 1

7. Can't light a fire?
85 82 19 84 18 19

8. Can't pay the captain?
93 6 13 14

9. Missing a bottle of rum?
65 66 53 29

10. Can't get past the quicksand?
31 52 4 84 73 10

11. Missing a map?
7 27 13 30 83

12. Haven't found the headhunter?
65 43 39

Pirate Ship:

13. Can't get off the ship?
37 79

14. Can't cut the chain?
36 8 19

15. Missing a cutlass?
65 43 39

16. Can't get past the crew?
85 72

17. Confused about the surgeon?
23 61 6

London:

18. Can't get the debris?
36 78 46

19. Can't get the fishing pole?
59 32

20. Can't board the plane?
11 61 15

21. Don't know the byword?
47 15

22. Haven't got any money?
41 55 72

23. Missing a hat?
41 55 72

24. Getting poisoned at Rick's Cafe?
74 14 32 57 92 32 57

25. Confused about the tiny little man at Rick's Cafe?
73 6

26. Missing an airline ticket?
59 32 44 40

Luxembourg:

27. Don't know what to do here?
59 90 44 55 72

28. Don't know which booth to sit at?
92 28 89 54 32 52 28 50

29. Missing an account number?
26 25

30. Missing a leaflet?
50 22 56

31. Getting killed by dart?
86 88 45

32. Still getting killed by dart?
92 16 3 87

33. Still missing an account number?
36 63 61 7

34. Confused about the man in room 207?
71 34 52 75

35. Jared shoots you?
20 6 81

36. Missing a gun?
80 70

37. Still missing a gun?
80 33

38. Game's over, but you're still confused?
49 91 49 35 49 9 49 68 49 2 71 77 49 67

1	TARZAN	25	LEAFLET	49	THINK	73	FOLLOW
2	JARED	26	FIND	50	CHECK	74	DON'T
3	ON	27	IN	51	OF	75	INN
4	HUT	28	HAT	52	AT	76	LIKE
5	MADE	29	BEACH	53	ANOTHER	77	MESSAGE
6	HIM	30	DARK	54	LEAVING	78	FISHING
7	DIG	31	START	55	FAT	79	ANCHOR
8	SHARP	32	IT	56	ROOM	80	TRY
9	TYCOON	33	BANK	57	!	81	FIRST
10	MAP	34	NOTE	58	SOME	82	RUSTY
11	LISTEN	35	ARCMAN	59	BUY	83	PLACE
12	ELSE	36	USE	60	BEHIND	84	AND
13	A	37	LOWER	61	TO	85	HIT
14	DRINK	38	TOURIST	62	CLIFF	86	WEAR
15	DERELICT	39	ONE	63	SHELL	87	SHIP
16	LIFEBOAT	40	CLERK	64	FIRE	88	SOMETHING
17	WAS	41	SEARCH	65	THERE	89	AFTER
18	ABRASIVE	42	PIG'S	66	IS	90	PICKLE
19	ITEM	43	ISN'T	67	WILLIAM	91	LUXEMBOURG
20	SHOOT	44	FROM	68	BOB	92	EXAMINE
21	LIGHT	45	THICK	69	LITTLE	93	OFFER
22	YOU	46	POLE	70	POLICEMAN		
23	TALK	47	ASK	71	READ		
24	ATTRACT	48	LEFT	72	MAN		

AS EASY AS 1-2-3



Probably the most impressive program to have been released so far for the Atari 520ST, VIP Professional is an extremely easy to use, integrated spreadsheet, database and graphics program which is identical both in features and commands to Lotus 1-2-3™. The same spreadsheet analysis, information management and extraordinary business graphics are all combined in one easy to learn, affordable package. What's more, VIP Professional not only has all the features of 1-2-3™, you can also type the same commands to do the same things. Or, better still, if you have the ROM version of GEM on your ST, you can use a mouse to make it even simpler! Probably the most surprising feature of VIP Professional is not its total compatibility with Lotus 1-2-3™, nor its ease of use with the GEM environment, but its price. Lotus 1-2-3™ for the IBM PC AT costs £395 (+VAT=£454.25), whereas VIP Professional for the ST is a mere £169 (+VAT=£194.35). That's less than HALF PRICE!

FOR THE 16-BIT ATARI ST PERSONAL COMPUTER

VIP PROFESSIONAL

VIP Professional is an extremely easy to use integrated spreadsheet program for the home or office. To give you the best program possible on your Atari ST, VIP professional integrates the three essential applications of Lotus 1-2-3™ with the smart face of Jazz™. VIP requires only one disk drive to operate and also works with a hard disk drive. It is compatible with both monochrome and colour systems.

INSTANT HELP

VIP Professional has Instant Help at your fingertips. At your whim, you can find more information about what you are working on, or more about other parts of the program.

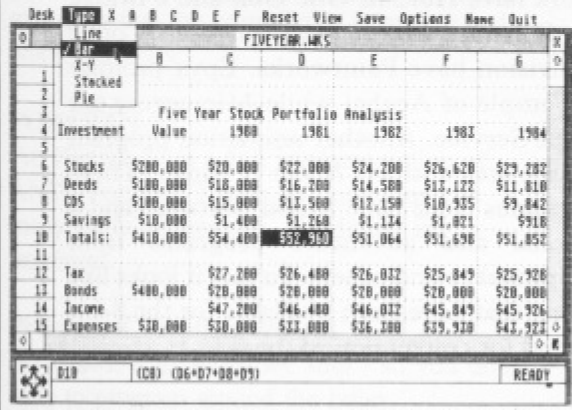
OTHER FEATURES

1) VIP Professional calculates to a full 300 digits against Lotus 1-2-3™ which only calculates to 100 digits.
2) VIP allows for 256 Query Fields against only 32 allowed by Lotus 1-2-3™.
3) VIP GEM version will have a complete mouse interface, capable of icons, drop-down menus, dialog boxes, different pointers, small bars, etc. Not incorporated in Lotus 1-2-3™.
4) VIP allows different fonts and provides a grid for cells which can be turned on and off. Not incorporated in Lotus 1-2-3™.
5) VIP supports greater memory and larger spreadsheets than Lotus 1-2-3™ version 1.
6) VIP graphs can be viewed at the same time as the worksheet. The pie charts can be exploded.
7) VIP is currently being written for the IBM, AMIGA, ST and APPLE MACINTOSH.

GEM VERSION

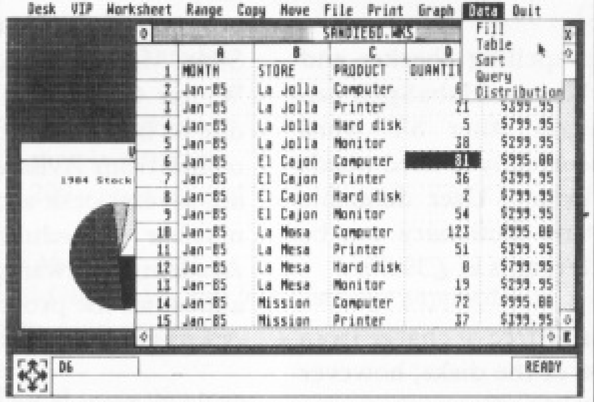
The current version of VIP Professional that is being shipped is identical to Lotus 1-2-3™ and does not therefore use icons, windows, or the GEM interface. When STs are available from Atari with GEM and TOS on ROM, VIP will release a version to make full use of the ROM and the GEM features. This version will be issued FREE OF CHARGE in September 1986 to all existing users of VIP Professional.

1 - SPREADSHEET



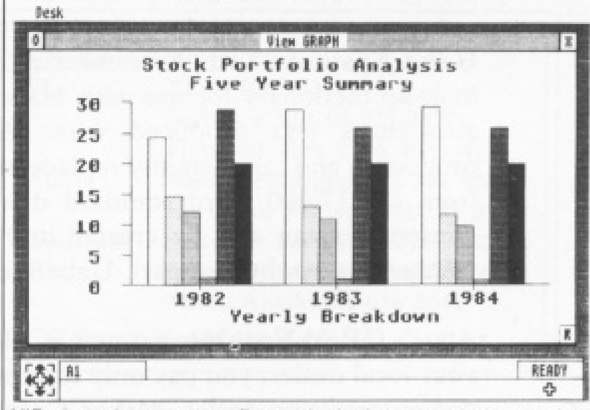
VIP Professional was modelled after the powerful, best selling Lotus 1-2-3™ program. It has every feature, every command of that program. In fact, the experienced 1-2-3™ user will feel right at home using the same keystrokes. But this version is made even easier to use by adding the user friendly face of GEM, so the beginner can use it right away too. If you want to do your home budgets, financial planning, or sophisticated business inventory control or budget modelling, VIP Professional will fill every need. And you can freely use 1-2-3™ or VIP Professional files created on other computers in VIP Professional on your Atari ST. And VIP Professional is not only flexible, it's powerful too, with a full 8,192 row by 256 column worksheet to use with up to four megabytes of memory. (Note: Lotus 1-2-3™ version 1 has only 2,048 rows).

2 - DATABASE



VIP Professional includes a powerful data manager to arrange, store and analyse your important information. It can be used to store records about your home or business and do extensive searches, sorts and comparisons. It allows up to 8192 records, with up to 256 fields and queries can be made with up to 32 search criteria. The database manager can be used in conjunction with the spreadsheet commands to add greater power to the database facilities including sorting specific ranges of the database. You can also specify how you sort files, from the highest value to the lowest value (or from the lowest to the highest), or alphabetically (forwards or backwards). The graphics part of VIP Professional can be used to show trends in the database or other information. With its powerful statistical functions, it has almost limitless power.

3 - GRAPHICS



VIP gives shape to your figures by letting you graph your data into six different types of graphs, in startling colour or black and white. Pie charts, bar graphs, stacked bar graphs, line graphs, scatter graphs and X/Y graphs. You can graph your spreadsheet or database data to give instant professional presentations. Your graphs will change instantly as you change the data. When creating a graph you may specify a main heading, a sub heading and a third title at the base of the graph. The necessary scales can be defined either by the user or automatically created. In pie graphs, the most important section of the pie can be separated from the other sections to draw attention to its inportance. You may save graphs individually on disk for use at a later date. You can also print your graph on any Epson compatible dot matrix printer.

FROM SILICA SHOP - THE UK's No1 ATARI SPECIALISTS

AVAILABILITY

VIP Professional is available from all Atari ST distributors and their dealers throughout the country. If your local dealer does not have VIP in stock, it can be obtained by mail order (with post and packing free) from:

SILICA SHOP LTD, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX Tel: 01-309 1111

THE POWER OF 1-2-3 WITHOUT THE PRICE!

Lotus 1-2-3 and Jazz are trademarks of Lotus Development Corporation

£169

(+VAT=£194.35)

INFORMATION REQUEST FORM

To: Silica Shop Ltd, Dept PSIX0986, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

Please send me further details of VIP Professional for the ST

Mr/Mrs/Ms: .... *Initials:* .... *Surname:* ....

Address: ....

.... *Postcode:* ....

I am interested in the Atari ST ☐

I already own an Atari ST ☐



NEWS

ST ST ST ST ST ST

A highly recommended newsletter on disk is available from **FASTER** in Montreal, Canada. Although produced by a small user group, the newsletter is the finest we have seen on disk, far surpassing those put out by many of the large professional organisations. GEM is fully utilised with drop-down menus for the articles and reviews which may be read from screen or printed out. Text may be read in French or English. Currently available from the Editor, Andre Lafreniere at 1161 Des Fauvettes, Boucherville, Quebec, Canada J4B 6A8 for US$5 plus $1 postage payable by International Money Order, it is well worth parting with a few pounds for. It is possible that it may shortly be distributed direct in this country.

Prestel users will be interested in a privately produced program **Flying STart** that allows full access to Prestel at 1200/75 despite the fact that the ST's serial port can't handle split baud rates! It is all done by clever programming, fooling the ST into thinking that it is running at one speed, and true Prestel emulation is available in low resolution with all colours being displayed simultaneously. The software will run on the WS2000 or any V23 protocol modem and can be used to access Prestel, Telecom Gold or Bulletin Boards. To order send £10 plus one formatted single or double sided disk and a stamped addressed envelope with 17p stamp to Peter Connors, 6, Robins Close, Bramhall, Cheshire, SK7 2PF.

Haba Systems Ltd. have released a spelling checker and look-up dictionary for use with HabaWriter. HabaSpell can also check text produced with certain other ST word processors and can instantly replace incorrectly spelled words from the 17,000 word standard dictionary. User definable dictionaries can also be created and any dictionary can be printed out in whole or part. HabaSpell retails at £39.95.

Atari's **CP/M Emulator** is now available free of charge from your local dealer, you pay only the cost of the disks, however one enterprising dealer, **Mikes Computer Store,** has produced an enhanced package which consists of two disks and a 14 page manual retailing at just £6.50 fully inclusive of post and packing. The original software was written in Germany and much of the instruction is in German. All these documents have been tidied up, though not translated, and other utilities have been added together with catalogues of public domain software. The hardcopy manual provides a useful introduction for those not familiar with CP/M. The package can be obtained from Mikes Computer Store, 292, London Road, Westcliff-on-Sea, Essex, SS0 7JJ.

Batteries Included have a formidable array of productive software lined up for imminent release. Already available is **Thunder,** a real-time spelling checker that will work with most GEM based word processors or can be used as a normal spelling checker for other text files. **Time Link** is a scheduling and time-keeping tool for your daily appointments and **BTS The Spreadsheet** is a sophisticated full featured spreadsheet that is also available as a desk-top accessory. Several of their already established, and highly respected, 8-bit programs are being released in ST versions including **HomePak, PaperClip** and **B/Graph.** The latter two are distinguished by the addition of 'Elite' to the title and a new Elite version of the highly acclaimed **DEGAS** is on the way. A number of ambitious enhancements to this program are planned making it the first of the second-generation graphics programs for the ST. Pictures will remain compatible with several other programs including PaperClip Elite which will enable text and graphics to be combined in any document.

Several ST titles are now available from **Antic Publishing Inc.** including Tom Hudson's computer-aided design program **CAD-3D.** Antic have taken the ST very seriously and have commissioned and assisted in the development of several new professional programs. CAD-3D can create and animate three-dimensional objects in wireframe and solid modelling with various light sources in monochrome or colour. Example drawings are included, including a remarkably complex model of Stonehenge. **Maps and Legends** enables the user to create maps of any part of the world from different perspectives and distances. These can be saved to disk in DEGAS format and be enhanced or amended with that program. This program is being used by the U.S. Air Force to chart their flight plans at Davis-Monthan Air Force Base in Arizona. Other programs include **Red Alert,** a new wargame which lets the player defend against a nuclear attack on North America and Flash, a new communications package that uniquely combines a straight text terminal with a GEM based word processor.

And finally ... some appetite whetters from the CES show in Chicago last June which may well be on their way to the shops by now. Artworx have Hole-in-One Golf and a Bridge program. First Star Software are coming out with Comic Strip Maker and Activision have Paintworks. Epyx promise Winter Games and Temple of Apshai while Microprose are due to bring out Silent Service. Another animation program comes from Avila Associates entitled Make It Move. There are several desk accessories from Blue Moon Software and a number of educational and adventure programs from Academy Software, Spinnaker and others. In fact it looks like almost all the programs that have been available for the 8-bit Ataris are being planned for conversion to the ST. ●

REVIEW

CUMANA
1 Megabyte Disk Drive

If you are looking for a disk drive for your 520STM or a second drive for an existing system, take a look at this little beauty from Cumana. From the front it is barely wider than a 3½" disk and just 1¾" high and 9½" deep. Being so small you wonder whether it can cope, but it is very solidly built and is housed in a grey metal case to match the ST. It is so quiet in use that without the busy light on the front you may never know that it was working.

The drive is switched on at the rear and is connected to the computer with a flat ribbon cable and an adaptor which is certainly not as neat as a conventional round cable but causes no problems. It is plugged directly into the mains with the three pin plug supplied and does not therefore land you with another huge transformer to hide.

Not much more to say except that it works perfectly, and quietly, is a full 1Mb double sided drive that can be used for single sided disks and, at £159, is £40 cheaper than Atari's 1 Mb drive. Cumana also do two 1Mb drives in a single case for around £279.

Superb quality, good price, highly recommended. ●

Now available worldwide:
Prospero's professional language compilers for STs

PRO PASCAL & PRO FORTRAN-77:

FOR ATARI ST AND SINCLAIR QL

USE THE LANGUAGES THE PROFESSIONALS USE: PASCAL AND FORTRAN.
C is high on performance but low on safety, structure, portability and maintainability. Pascal is excellent for education and for long-term projects. Fortran gives you access to hundreds of existing programs – and uses established programming skills!

ISO-PASCAL
Pro Pascal is validated to ISO 7185 / ANSI 770X3.97 Class A (no errors) on the Z80 processor under CP/M and the 8088 processor under PC-DOS. This provides a guarantee that the compiler is complete and works perfectly.

FORTRAN-77
Pro Fortran-77 is a full implementation of ANSI Fortran–77 with no omissions and many useful extensions. Validation is imminent.

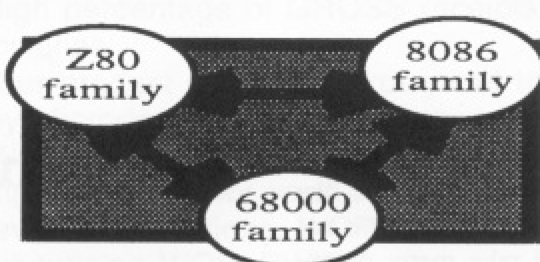
Prospero Compilers Work!
No known bugs when we ship - so you don't have to program around the holes.

"Lazy I/O" for interactive use.

Good Housekeeping
All files closed on exit from procedure

Hand-coded library
Produces compact and efficient programs.

Ideal for
- software developers
- universities and colleges
- government and industry
- students of computing
- development of personal skills
- solving technical problems
- training institutions



Prospero compilers: portable source code

16 digit accuracy
Single and double precision IEEE format arithmetic gives 7 or 16 digit precision.

50,000 Lines Big
Compiles big programs >50,000 lines... >5,000 identifiers...Separate compilation to build libraries and massive program suites.

Compilers include
- compiler
- linker
- run-time libraries
- librarian
- X-ref program
- sample programs
- 200+ page manual

GEM
Full GEM AES and VDI bindings supplied with Atari products.

Pascal «—» Fortran
Interlinkable code means you can use the best of both languages. Ask for details.

We Specialise
At Prospero we specialise in writing language compilers. We produce the best possible compilers, conforming to the appropriate standard, and giving programmers a secure base on which to build.

Quote: "Pro Pascal is not only ISO-validated, it is also a superb-quality and very full software development tool." Personal Computer World Nov 1985

Prospero compilers are used at more than 6000 sites around the world.

It's easy to order!
Credit card holders phone 01-741 8531. Mastercard, Visa, Diners & Amex accepted. Prospero's compilers are also available from good software dealers and distributors worldwide.

Reviews & Info
Call 01-741 8531 or write in for a free info pack with datasheets and magazine reviews.

New: Pro Fortran-77 for MS-DOS will be available in August/September 86.

Software distributors
Contact us for our Worldwide Distribution Guide.

UK trade distributors:

PC:	Xitan 0703-871211
	Software Ltd 01-278 2377
	First Software 0256 463344
Atari:	Silica Distribution 01-309 0300
	European Software 01-253 3303
Amstrad:	Software Toolshop 0525-718271
QL:	Strong Computer 0267-231246
	Micro Anvika 01-636 2547

Call for worldwide distributor list.

Mail order service
Send this coupon with cheque to Prospero Software Ltd, 190 Castelnau, London SW13 9DH, England. Add 15% VAT in UK or £5 shipping outside UK. Allow 28 days for delivery.

Please supply (enter number required):
___ Pro Fortran-77 for Atari ST at £129.
___ Pro Pascal for Atari ST at £129.

Also available:
___ Pro Fortran-77 for Sinclair QL at £86.91
___ Pro Pascal for Sinclair QL at £86.91.
___ Pro Fortran-77 for MS-DOS at £420.
___ Pro Pascal for MS-DOS at £320.
___ Pro Pascal for CP/M-86 at £320.

Special offer till 1/10/86: both Atari compilers for £229.

I enclose payment of £_____.
Name..
Address...
....
Country...
Telephone No..

In case of query call 01-741 8531 or telex 8814396. Tick product name if you just require information! P6 9/86

Prospero Software
LANGUAGES FOR MICROCOMPUTER PROFESSIONALS

190 CASTELNAU, LONDON SW13 9DH, ENGLAND TEL 01-741 8531 TELEX 8814396

ST ST ST ST ST ST

ZOOMRACKS

a new concept from Quickview Systems

Reviewed by Les Ellingham

One of the common problems with many databases is that they tend to have a fixed format that requires you to adapt your methods to suit. More advanced programs like DBase allow a greater flexibility but these programs are not easy to use for the non-programmer and take many pains-taking hours to set up. Quite often it is easier to continue to use a manual system of index cards, particularly with small databases, as many of you will have found out. Now with Zoomracks you can have the best of both worlds.

Zoomracks works on a principle of index cards with each card holding information in any format you wish to define. Unlike other systems such as Atari's Home Filing Manager for the 8-bit systems however, Zoomracks offers you almost unlimited flexibility and can be adapted to hundreds of applications. Each of your cards is held in a 'rack'. You can define as many racks as you wish and save them to disk. Up to 9 of these racks can be used at any one time, although individual racks can be deleted and replaced. Each rack is displayed on screen with the first line of each card showing for easy reference. A quick click of the mouse zooms a chosen rack to full screen and you can then select a particular card. Click on *that* and the card zooms to full screen for viewing or editing. Each command is a toggle, so clicking again, or using function keys, will return you to the previous state. After a while it is amazingly easy to move around between different racks and cards.

The amount of information that can be held on each card can range from a couple of words to literally pages of information. Each card is divided into fields which you specify and which can be easily changed, rearranged or deleted, even with information on the card. Up to 27 fields can be used on each card and each field can have up to 250 lines of 80 characters. What's more you don't have to define the size of each field, just keep putting in information. If it gets to the stage where you can't see all of the information in a particular field, just click on the field and that will zoom up to full screen. As I sit and write down the capabilities of the program I become even more amazed at its flexibility. Any field can be edited at any time with the inbuilt word processor which allows you to delete words, cut and paste and more. It is fairly limited as a word processor but perfectly adequate for database use.

Several racks at once

The cut and paste facilities can be used on whole cards as well as fields. Any card can be easily and quickly deleted, copied or moved to another rack. Here lies one of the real beauties of the system. Think of using an index card system for, say, a list of club members who you want to canvass to help organise a new event. There is no one common factor to select them, you just know who might be interested and who is not. On a conventional database such totally random choices are not always easy to control and can only be achieved by having some sort of key field which you can mark. Often if you forgot to include a spare field when setting up the database, you have had it. With Zoomracks you just set up a new rack, go down your main rack and copy cards over at whim. You end up with a completely new database with the minimum amount of effort. And if you should decide that you need another field, just stick it in, anywhere! I don't know of any other database that offers such complete flexibility.

There are going to be many features of Zoomracks that I will not have space to cover but in addition to those already specified, there are sorts available on any field, cards can be printed individually or the whole rack can be printed out. There are extensive macro facilities allowing up to 27 single key macros to be defined, including auto-execute macros that will load defined racks when booting up. The disk contains many examples of pre-defined racks that can be used as is or that will give you ideas for your own applications. These are simply loaded as required from rack 0 which is always present and contains a directory of your disk.

The range of use for Zoomracks is probably wider than for any other database program and is amply illustrated by the use of several racks to hold a full tutorial for the program. This alone will demonstrate the power of the system and is essential reading to enable you to get the best from the system.

Although supremely easy to use once mastered, it must be said that there are a great number of commands to be remembered, although no more than with a word processor, and it will take several hours to become familiar with them. There are one or two areas which I did not like such as the way in which information has to be entered into cards. The TAB key must be used to move from field to field and RETURN terminates all entry to a particular card. This is particularly frustrating as it is almost automatic to hit

```
                               OAPPLICT
Appointments                   Anyone, consumer, secretry, businssmn, personl
Auto expense report            Salesmen, businessman, consumer
Backorder report               Salesmen, manufacturing
Beta test followup             Programmers
Bills of material              Manufacturing, engineers, office manager
Book catalog                   Writer, consumer, teacher, engineer, physicins
Bug tracking                   Programmers
Bulletin board directory       Computer user
Calorie counter                Consumers
Case citations                 Lawyers
Catalog                        Anyon, slsmn, bsnssmn, mngr, offc mngr, scrtry
Check register                 Consumer, business, office manager
Christmas card record          Consumer
Commission statement           Salesmen
Communications                 Future
Credit application             Accountant
Credit card record             Consumer
Credit history                 Accountant
Daily cash report              Accountant
Design notes                   Programmers, engineers
Disk directory                 Computer user, programmer
Electronic mail                Future
{AltH-help/, AltZ-zoom/, AltN-nearby/, AltG-goto/, AltM-modify/, AltO-other/}
[   1] Memory:Empty ___█________|___________½___________|_____________ Full
```

Just the titles

```
                               ORECIPE
Chicken with Lemon-Garlic Butter                              2 to 4
Michael Field's Cooking School, Page 121, Barrows
Two                     2-1/2 lb. broiling chickens halved or quartered
1/2 lb                  sweet butter, softened
1 teaspoon              lemon juice
2 teaspoons             soya sauce
1/2 teaspoon            finely chopped garlic
                        Freshly ground black pepper
Preheat broiler for 15 minutes--it must really be hot and allow
25 minutes to 1/2 hour to broil the chickens.  Be fairly precise
about this, for the broiled chickens will be at their best only
if they are served immediately.

Wash chickens and dry with paper towels.  Cut out the backbones
and remove wing tips and twist the wing joints in their sockets
so the chickens will lie flat.

Cream the soften butter.  Beat in the lemon juice and a two drops
minced garlic.  Spread on chicken reserving rest.  Lay chickens
skin side down, on the broiler rack, grind a few specks of black
pepper over them and sprinkle evenly with about a tablespoon of
coarse salt.
{AltH-help/, AltZ-zoom/, AltN-nearby/, AltG-goto/, AltM-modify/, AltO-other/}
[   1] Memory:Empty ___█________|___________½___________|_____________ Full
```

Zoom in on a full card

RETURN when you have completed something. If you have not finished a card you have to go back through the edit procedure and TAB down and start again. Several of the commands are extremely long winded and require repeated steps to go into and come out of a procedure but will maybe become automatic with time. At the beginning it is just a matter of trying to remember everything although there are on-screen prompts and a help facility to assist you.

There is no way that I have done Zoomracks justice in this review, several more pages would be required, so I can only repeat that this is the most flexible database system I have ever seen. For a home user, in particular, it will cope with every single information filing application you can think of. Stick on your address book, telephone numbers, record catalogue, recipes, important reminders, kids homework, your diary and anything else you can think of. Zoomracks can cope with it all. It really is an amazing system.

Zoomracks has been extensively reviewed in various newsletters in the States following a promotional campaign by Quickview Systems and they have all raved over it. Quite frankly I get sceptical when reading certain reviews because I know some reviewers don't like to criticise when they have been given a free copy of an expensive program but in the case of Zoomracks every word of praise is justified. It's a new computer concept that surely must change the way databases are used. I challenge you to find a single program that gives you a more comprehensive way to use your ST to keep track of your life.

Zoomracks is distributed in the U.K. by Silica Distribution Ltd. so it should be available from your usual retailer.

ST ST ST ST ST ST

One of the most prolific producers of ST software is Michtron of the U.S.A. whose products are distributed here by Microdeal. Mark Hutchinson looks at the latest batch of releases. Are they good or bad?

CORNERMAN
Microdeal
Mono/Med Res.
£29.95.

This is a desktop accessory file, automatically loaded when the computer is switched on and which sets up a digital clock in the top right hand corner. It takes up 200K of memory, so is best used when you have TOS in ROM. As usual, Microdeal parcel this up in a neat two ring binder with a slot for the disk. The pages are well printed and readable although some details are missing. The booklet also contains explanations of some common error messages. The ten utilities can be called by using the function keys or from a menu with the mouse.

The utilities are:

ASCII TABLE.	ASCII characters with their DEC/ HEX equivalents.
CALCULATOR.	16 digit, scientific calculator.
NOTEPAD.	Seven lines of 32 characters for small notes.
DIALER.	Saves names, addresses and dials telephone numbers.
PHONE LOG.	Keeps track of telephone calls & their results.
FIFTEEN.	Small game to pass the time.
CLOCK.	Analog clock with privacy feature.
SETUP.	Changes default values.
PRINT.	Prints from the CORNERMAN data files.
DOS WINDOW.	Allows exit from GEM to run a TOS or TTP program.

The ASCII TABLE is very handy when writing a program although the editor must be in GEM to allow entry to CORNERMAN. Much better than hunting through a reference book and neater than having photocopied lists lying around.

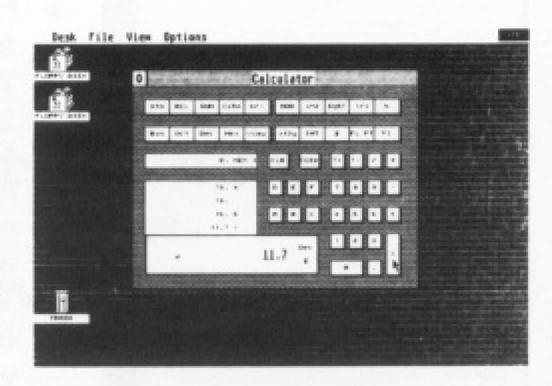
The **CALCULATOR** is one of the best of its kind that I have seen. It allows DEC/OCTAL/HEX/BINARY calculations (e.g. AND, OR etc.) and conversion up to 16 digit precision, all the usual functions plus modular division, three memories, etc. The input can be by mouse or keyboard and a chime is sounded if the function is not valid. The functions change according to the operating mode and the display shows a 'paper roll' with the last four entries and the last four functions printed. You can use it to work with dollars and cents (or pounds and pennies) as it is set up to use only two digits to the right of the decimal point. I found that my copy would not accept two figure cents. I also found that the square root took ages to calculate, obviously a wrongly chosen algorithm. No mention is given about choosing the memories – it is done with the view key – nor are the T+ and T- keys mentioned. I think they should step the 'paper roll' memory backwards and forwards, but they operate a printer. Perhaps an update is due. Although I have a couple of public domain calculators, this is by far the best and almost worth the price of the disk alone.

NOTEPAD will store 32767 notes of 7 lines by 32 characters in a data file. All notes are editable. A handy thing to have once you get into the practice of using it, and it saves you having all those little bits of paper lying around that you can never find when you need to.

The **DIALER** is somewhat similar to NOTEPAD, with 32767 pages of information that stores names, addresses and telephone numbers. When the PHONE log is opened, the result of your call is stored. Again the files are fully editable and you can scan the files for a name starting with a given letter. The dialer is Hayes compatible and can be formatted for tone or pulse dialling, or a mixture.

The **PHONE LOG** holds the results of any calls made with the DIALER, e.g. line busy, wrong person, no answer etc. Very handy for those of you who make a lot of calls and have a bad memory.

FIFTEEN is a game of sixteen squares, one of which is empty, and you must arrange the fifteen numbers into their proper order. I have a couple of these on public domain accessories. A time passing puzzle well programmed, but it



should be kept public domain rather than be on this disk.

The **CLOCK** is an analog clock that can be opened up to the full extent of the screen. It has a security code that must be entered before the clock returns to GEM (optional). I have no idea why you would want this, unless you need to leave the computer for a while without clearing down some private screen.

SETUP allows setup of the accessories (along with an RS232), including their position on the screen.

PRINT allows you to print from the data files, either all, current or before or after a given date.

Finally **DOS WINDOW** allows entry to programs with .PRG, .TOS, or .TTP extenders but is not useful if you have several such programs on the one disk.

As a package the whole thing is well put together and will be particularly useful to someone with a modem. Although this applies mostly to American ST owners, due to the lack of modems in the U.K., it does not detract from the value of this package. I feel that some items should have been left off. If you do not use this accessory with a specific program such as a word processor or spreadsheet then you will not need the DOS WINDOW nor do you require FIFTEEN, there are enough on public domain disks. I think the package is a good idea, but I am not so sure about the price. This may come down as user groups start adding their own routines to the public domain network. One good feature is that it can be copied over to a hard disk – should you own one.

NEXT ISSUE – A Review feature on ANTIC's ST programs including CAD 3-D and Maps and Legends.

ST ST ST ST ST ST

MAJOR MOTION.
Microdeal
Colour Only
£19.95.

The disk and booklet came in nice cardboard box (but does the disk have to be loose?). The booklet – two unstapled pages – gives you enough information to get started and know what you are up against, other details you will find out from experience.

The intro screen is a neat revolving sign and if no button is pressed then the program goes into auto mode. This is a single or two player game with each taking turns on the road. The object is to destroy enemy cars – but not civilians – and to survive. There are several choices of weapons, and the operating keys can be re-programmed (a nice touch). At the start, you will only have the choice of forward firing cannons. Your success can be recorded on a high score table written to disk.

The game starts with a truck driving along a road. The ramps drop you off and you are on your own. When the truck reappears, fortunately a regular occurrence, you must call it using one of the keys then climb the ramp to be rewarded with a new weapon (anti-helicopter missiles, repulsor, turbo, oil jets, smoke). The truck will then dump you onto the road again often, to my frustration, right in the middle of trouble.

So who is the enemy? Any car that tries to shred your tyres, knock you off the road or shoot at you is a car to take out. Added to all this is a helicopter dropping oil and blowing holes in the road. You can also kill civilians but be warned! Knocking out too many civilians will cause a fighter to blow you up! You will soon become adept at knocking cars off the road, until you meet up with your 'Evil Twin'! Watch out for the car that shoots at you. I have nicknamed this the 'Mafia Staff Car', it is very effective!

Sometime during the game you will come to the river. Here, your car will become a boat and the terrain will become very treacherous. Oil, mines, other boats and islands are your main dangers. Beware your own mother ship. I have been pushed into islands by it and lost several lives! This is not an area for high speed. Once past the river you are on the road again.

I normally do not play arcade style games and usually find that I will stop playing them altogether after a few days. This game is in a different league. I really enjoy it and come back to it time after time. As I am quite placid behind the wheel of my car, I feel a 'Jeckle-and-Hyde' character with this game. How I wish my Scirroco was like this car! The graphics are good and the scrolling is very smooth.

At a price of £19.95, I have no hesitation in recommending this game. Bad points? Apart from the mother truck/ship pushing you off the road or dropping you right in it, I have not come across any. One point to note however. You will be using your mouse extensively and the rollers will collect dust and grease. This effects your overall handling and you will need to clean the rollers once in a while.

CARDS
Microdeal
£19.95
Colour/Mono

The disk and instructions come in a neat little box but, again, with the disk loose in the box. It is taken for granted that the games are known to the user, including the rules laid out by the 'Official Rules of Card Games', 56th. Edition, published by the U.S. Playing Card Co. I had never seen this reference before but I found all the games playable without this source of reference.

When you load up the disk and open the game program, it sets up to GEM with drop down windows letting you choose the game to play or the options (if available), including a score save. Probably the first one chosen will be **SOLITAIRE.** This is more correctly a generic name for solo card games with individual games having their own names. I cannot recall the name for the game represented here but it is a game that requires a good deal of thought, although if you have the cards sorted badly then you cannot win. The cards are sorted into groups of three with a base for the suits at the end. The object is to build up the suits from the aces, freeing cards in the process. Cards can be grouped by suit, King downwards. You are allowed two redeals that may or may not jumble the cards enough to let you win. This is a good game ruined by an annoying mouse flicker and the redrawing of groups to fill up horizontal lines. This leads to confusion, as the group you were working with can move several times about the screen, most confusing. When you win there is no congratulatory notice. A pity about the grumbles as this is my favourite game of the five.

KLONDIKE is the most common game played solo. A row of seven cards, with the last turned face up, then a row of six, five etc. The four suit bases are built from Ace up, and cards are played, alternating colours, King down on the rows. Unfortunately, this is a variation that I don't like playing, as it goes through the pack one card at a time and does not allow a re-deal, nor can you move one face up card at a time to free another (not a rule that I know!). I found it hard to recognise cards lying under each other and this was worse in mono. The evaluation copy I was sent did not allow me to place the aces onto the bases, something that must be corrected or else it is not worth playing! For some reason this game plays with money stakes, has anyone ever heard of a game of patience (a game you play by yourself) played for money? (Strangely enough, this game is not described in the booklet).

POKER SQUARES is a thinking game. The pack is continuously being shuffled and a key press will select a card. The card is placed into a five by five matrix to complete poker hands (five across, five down). The computer sorts out the score for you. I enjoyed this with the computer better than actually using cards. This game could well appear in the public domain, written in Basic.

CRIBBAGE, a well known game, comes out quite well on the ST. I am not so sure about playing the computer game as I like having a human opponent to talk to. The count is taken too fast for me to check (just proves how little I play the game these days). The fun in cribbage is trying to work out all the variations and arguing with your opponent so with a computer the game is not so alive. This is a personal opinion – the game is good.

BLACKJACK. As I do not gamble (but I have played this game and its variations for fun) I do not find it exciting. I think that I would miss the interaction of a human player, though the game itself is very playable but as usual the odds seem to favour the house!

Overall, the games are good, well designed and written. The only bad part is KLONDIKE but hopefully a new version will appear. I find it hard determine value for money, that really depends how much you enjoy playing cards.

MENU+

Reviewed by Matthew Jones

As I have described in some of my reviews, a typical programming session consists of an edit, compile, link, run (debug) cycle. The GST C language comes with a shell program to allow you to go through this cycle by selecting the programs from a set of menus, as well as setting each programs' options (like list file on/off, etc). Megamax C comes with a similar shell. They are very easy to use, and just what is needed to make the boring part of programming easy. But what if you don't like the editor that is supplied with the system, or you have a special requirement that is not catered for in the shell? You cannot change either of the two shells mentioned, so the answer is you either accept them as they are, or resort to running each part separately. Metacomco have produced their answer to the problem, MENU+.

MENU+ is a user customisable shell. With it, you can configure three drop down menus to contain what you want, and to do what you want. The first menu is called FILE, and typically contains entries like 'choose' and 'choose .C', as well as 'COMMAND' (run a program) and 'QUIT' (leave MENU+). The two choose options are used to allow the user to select which file the commands are to operate on. If you were using an assembler for example, you would have 'choose .ASM', with Pascal, 'choose which is loaded by MENU+ when it is run'. In the next menu, TOOLS, the actual working programs are available. Whilst you can have the normal 'edit', 'compile', 'link' and 'run', you can give yourself extra options, like 'compile with debug' and 'compile, link then run' (though not in so many letters).

Behind each option lies one or more command lines. For instance, the EDIT line in the menu could start the line 'd:/utils/edit.prg path/file.type ed_opts'. Thus the edit program would be run, and pass the current file's name, along with options which are given defaults in MENU.INF, and are alterable when in the shell in the third, OPTIONS, menu. With, for example, the compile option you may want to have more than one program run consecutively, and MENU+ allows you to specify both (and more if you want). You can choose to pause after the first one has completed, and to stop the sequence if the phase has failed. You specify a similar command line for each option you want in the menu, until you have all you need to complete your task. The system is very flexible, and will cope with many different situations by having more than one MENU.INF file.

The manual is a 26 page leaflet which adequately describes how to use and program MENU+. It also describes UTIL.TTP, a utility supplied to perform basic tasks such as file print, copy, delete and rename.

Despite its very powerful facilities, however, I did find some problems with MENU+. In the first place, it is difficult (though not absolutely impossible) to act on files in a different sub directory, perhaps to perform a link in /object/ when you are using MENU+ in /source/. Also, much more serious, I found it crashed quite a few times while I was developing a MENU.INF file, so much so that I gave up finishing it. I am using it for another purpose though, where it works just fine.

MENU+ is good when it works, which is most of the time. For the asking price (about £20, or free with a Metacomco compiler) it is well worth experimenting with if you find your current setup restrictive or slow to use. ●

ST ST ST ST ST ST

A BIGGER SCREEN

Dave Keel's solution to the Glue chip problem brings an unexpected bonus

It's annoying, to say the least, after having spent £750 on a computer that has now been discontinued/discounted, to find you are asked to pay an extra £25 for a set of O.S. ROM chips and then, if your colour picture isn't central to your monitor screen, being asked for another £20 for an updated Glue chip (and have you ever tried fitting a Glue chip?....forget it!).

The programs accompanying this short article are short ST Basic or machine code utilities that will help you to overcome the dreaded Glue chip problems via a software fix. This fix will work for most colour software, and works by resetting the vertical synchronisation signal to your monitor.

The U.K. version of T.O.S. in ROM format sets up the video chip to generate 50Hz vertical sync pulses, and this has the effect of shifting the screen over to the right of most currently available monitors, unless you have Glue chip number C025915-38. This only happens in low and medium resolution modes, since the sync is set to 70Hz for the monochrome Atari monitor when in high resolution mode.

The problem of the screen shift can usually be overcome by resetting the vertical sync to 60Hz once you have booted up and got the ST into the screen mode relevant to the software that you wish to run.

The synchronisation is controlled by a register located at $FFFF820A (within the video controller I.C.). The register is 8 bits wide, but only the two least significant bits are used:

BIT 0	If this bit is set then the sync pulses are taken from an external source, if the bit is clear (normal state) then the video controller provides the sync pulses.
BIT 1	If set, the controller produces a 50Hz vertical sync, if clear, then it's a 60Hz sync.

All that is needed is to clear bit 1 of the register to get our 60Hz back!

The usual method of clearing bits of a register is to get the current value of the register and perform an AND operation to ensure clearing the desired bits but leaving others unchanged. To clear Bit 1, and leave all the others, we must AND the current contents of the register with $FD:

$FD = 11111101 binary
Δ
clear Bit 1

The assembly language programmer will need to get into supervisor mode to change the register since it is within the protected memory area. The code is shown in listing 1.

If the machine code is assembled, a stand-alone program is created which can even be put into an 'Auto' folder on any of your disks containing low resolution colour software – thereby enabling you to automatically recentralise the screen on switch on. DON'T put the 'Fix' program on a protected disc – it may corrupt the program – and don't expect the 'Fix' to work with Brattacas, or any other software that has to be booted from disk at switch on.

For the Basic language programmer, it is far simpler to directly poke the whole byte to the relevant address, and listing 2 does this. Obviously only two lines of the program are significant, since all 'Rems' and the 'end' statement can be omitted. Type in the program, save it to disk first, then try running it in low or medium resolution mode, and finally run your colour program.

A BONUS

Even if your Glue chip is OK, you'll still find the programs listed here useful. When the ST is set to U.S. 60Hz sync, the screen area enlarges considerably, and picture quality improves, noticeably reducing the amount of often seen shimmering and 50Hz pulsing. Try it and see! ●

```
*     Reset vertical sync frequency back to     *
*     60 Hz in order to shift screen back to    *
*     centre for those with UK TOS ROM and      *
*     funny glue chip.                          *
*
start     move.l      #my_stk,sp     *Create own stack.
     clr.l      -(sp)                *Flag request for Supervisor.
     move.w      ##$20,-(sp)         *Set for Supervisor call.
     trap      ##$01                 *Now Super, old SSP kept in d0.
     addq.l      ##$06,sp            *correct the stack.
     move.b      $ffff820a,d1        *Get current value of sync reg.
     andi.b      ##$fd,d1            *Clear bit 1 to set for 60 Hz
     move.b      d1,$ffff820a        *Put in the new value.
     move.l      d0,-(sp)            *Set up call to restore user mode.
     move.w      ##$20,-(sp)
     trap      ##$01                 *Now user mode.
     addq.l      ##$06,sp            *correct the stack again.
     clr.w      -(sp)                *Terminate the program.
     trap      ##$01
*
     .dc.l 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0     *This is our stack.
*
my_stk     .dc.l 0                   *point to high end of it.
*
     .end
```

Listing 1 – Assembly source code

```
10     rem ***********************************
20     rem *fix for U.K. ROM TOS 50Hz vsync*
30     rem ***********************************
40     rem *  set data length to one byte  *
50     rem *      with one byte offset     *
60     rem
70     defseg=1
80     rem
90     rem *     clear 50Hz. vsync bit      *
100    rem
110    poke (&hff8209),&hfc
120    rem
130    end
```

Listing 2 – ST BASIC

A 5¼″ DRIVE FOR YOUR ST?

Dave Keel takes a look at one from AS&T

Unless you've recently won the football pools, it's a safe bet that you've had a nasty shock when the time came to buy a box of disks for your shiny, new, ST. If, like me, you are an ex 8-bit user, used to paying £10 to £15 per box, and cutting a notch (I know it's frowned upon, but I've never had any problems) to double the storage, then having to pay £25 to £50 for a box of disks, and being unable to make the plastic 3½″ disks 'flippy' floppies is quite a worry. I know you get 350k storage capacity per disk, but ST programs tend to be l-o-n-g.

The launch by AS&T Ltd., at the Atari User Show of a 5¼″ double sided 1 megabyte disk drive for the ST at only £124.00 certainly seemed to offer an answer to such problems. I've been using one for a while now, and it does......well, almost.

The first thing to consider is that the 5¼″ drive is really only useful as a second drive. If you've bought the 520ST or the 1040ST, then you will already have a 3½″ drive, and this is particularly important, since it's very unlikely that any software houses will release their ST titles in 5¼″ format. If you buy a 520STM, then you'll ideally need to buy a 3½″ drive first (AS&T Ltd. also sell these at prices well below the official Atari version!) to enable you to make full use of the 5¼″ drives' facilities.

The first impressions of the AST 5¼″ drive is that it is a BBC micro refugee. The case is in the same colour and stipple finish of the Beeb, and further investigations revealed that the company is closely linked with Solidisk – a very successful BBC O.E.M.

There's no power supply, power being obtained from a 6 pin DIN male/female piggy back lead which plugs into the semi-exposed rear of the drive, and between the SF354/SF314 and it's power supply, thereby running two disk drives from the single ST 3½″ drive power supply (in which case, I doubt whether you could use the 5¼″ drive on the 1040ST, which does not have a separate power supply for it's drive – unless, of course, you purchased another power supply). I'm assured that the SF354's power supply is up to the task of running two drives, but mine does get very hot! The lead to chain the 5¼″ unit to your 3½″ drive (or directly to your ST disk port) is supplied, this being the unusual ST 14 pin 'DIN' plug, but terminated in a PCB edge connector which also has to be affixed to the PCB at the rear of the 5¼″ unit. The connections all seem a little delicate, and I certainly wouldn't like to move the thing around too much.

These few connections having being made, you can insert a 5¼″ floppy disk into the drive, select drive B, and format your disk to over 700K. You can, alternatively, notch your 5¼″ and format it as two 350K 'flippy' floppies (at your own risk!). From there on, other than noticing that your future blank disk purchases are no longer a shock to your wallet (or purse!), the fact that the drive is 5¼″ is totally transparent to your ST's disk controller, and anything that you can do with a 3½″ drive you can do with a 5¼″.

In use the 5¼″ is rather noisy – no noisier than most Beeb drives, a little noisier than the 1050 drive, and a lot noisier than the standard ST drives, but although the clunking and grinding is initially a bit shocking, it does nothing to detract from the efficiency of the drive, and eventually becomes quite reassuring!

Disadvantages?....I've mentioned the noise – not really a problem. The drive also has the strange habit of 'chugging' if you switch off your ST drive before switching off your ST – again, not a real problem. What does present a few headaches, though, is the fact that the 5¼″ drive tends to be the 'end of the line' as far as ST drive connectors go. Look at the rear of your SF drive, it has input and output sockets, and these enable you to daisy chain two of your drives together. Either drive can be used in any position. The 5¼″ unit, however, has only the PCB edge connector and onto this plugs the lead terminating in the Atari style drive socket. This can plug into the rear of your SF354, and the 5¼″ becomes drive 'B'. Alternatively, you could plug the 5¼″ directly into the rear of your ST (just as you would with an SF354) and use it as a single drive 'A', but it must be said that on my model this was not possible – the drive just started 'chugging' whenever I switched on!. I'm told that the addition of a few extra components/wires will overcome this problem, but it's not the type of thing you would want to do to your new £100 plus purchase. AS&T tell me that they are looking at the situation carefully, but they don't really consider this to be a serious drawback. You certainly cannot have your 5¼″ drive as drive 'A' and your 3½″ as drive 'B'.

So, what about backing up your 5¼″ disks? You've connected up your 500k SF354, and your 1Mb 5¼″, you've just put all your favourite Degas and Neo screens onto a couple of 1Mb. 5¼″ disks and you then want to do some back-ups of these disks for a friend who also has a 5¼″. You just can't do it easily, I'm afraid, because you can't drag the drive 'B' icon over the drive 'B' icon. It's either a file by file transfer, or you could set up the largest possible ram disk and copy a few files at a time or you can copy over to a few blank 3½″ disks and then copy back again to your blank 5¼″.

Advantages?.... well, if you have not tried a 1Mb. drive before – it's great! 726016 free bytes when formatted (actually 11.5k more than two single sided disks!). I now find that I can run the Digital Research 'C' compiler and linker from a single disk, obviously speeding up compilation times immensely (I imagine that Modula II users would have the same benefits). Disks are much cheaper, file transfers are much easier than with a single drive and I wouldn't be surprised if when the CP/M emulator is freely available, you will be able to read certain CP/M disks on the 5¼″ drive (especially since a 40/80 track switch is available as an optional extra at time of purchase). I noticed no difference in speed of operation between the SF354 and the AS&T drive. Both are spinning at 300 revs per minute and both appear to load ST Basic in exactly the same amount of time.

Conclusion?....I've bought one, and although I've had a bit of a moan about the problems of backing up a 1Mb. disk, I certainly wouldn't part with it or swap it for an SF314. My disks are cheaper, I can get twice as much on them, I've freed many of my 3½″ disks by putting unprotected programs onto 5¼″, and I've saved £90 on Atari's price for a 1Mb. drive. On reflection, I'm quite happy to put up with any of the drawbacks I've mentioned, and the AS&T 5¼″ ST drive gets my wholehearted recommendation. ●

ST ST ST ST ST ST



In the beginning adventures were plain text. Masters of the genre like Infocom quickly took these to high levels of sophistication but people still wanted more. Graphic adventures came along where locations were illustrated with pictures but these tended to add little to the adventure save for the occasional clue to be found in the pictures. Software writers tried their hand at 'arcade adventures' where the traditional style was replaced by 'action' – of a limited fashion – but few of these could match the breadth of a text adventure and none were that good graphically. The obvious answer, for those who wanted more than text, was a good adventure with top class graphics and animation. Now Sierra On-Line have come up with just that – 'animated adventures' – and Kings Quest II and The Black Cauldron are a couple of crackers!

What companies have struggled to do on 8-bit machines becomes fairly easy on an ST with 16 colours in low resolution (the equivalent of 8-bit high resolution) and both these adventures have excellent illustrations, although still based on the style developed for 8-bit machines, and full animation with the main character able to walk and swim, go behind or in front of objects and such like. Other characters, who appear at random or according to location, are also animated as are various sundry objects such as rivers, waterfalls and animals. It is all quite different from what you are used to and has sent paroxysms of delight through all those I know who see it for the first time.

KINGS QUEST II

Kings Quest II is the first (I am not sure if there is a Kings Quest I for the ST) of the two and comes well boxed with a gatefold containing an outline of the story and some poems which will help. Inside is a nicely embossed and illustrated booklet which gives the rest of the story of King Graham and his quest to find a bride and so ensure an heir to the throne of Daventry. The story is not particularly strong and the choice of names unimaginative (Daventry sounds as exciting as Wigan!) but it will still tax all but the most advanced adventurers and give everyone the joy of discovering new locations and action.

Your hero can be controlled by joystick or from the keyboard and is able to walk in any direction at command. Actions are supplemented from the keyboard by typing in the usual commands such as look and get. Using the joystick or keyboard is one of the major departures from the normal format for the program does not recognise words like North and South! Quite frustrating if you impatiently boot up the disk and begin to play! Odd villainous characters will appear and you must learn how to deal with them and you must explore everything in the usual fashion. Points are earned for every little 'discovery' as you continue your quest and get deeper and deeper into the game. I've played it a few times now and each time the action has been different so that holds promise for continued interest.

I'm not a great adventurer and therefore find the game a sufficient challenge (I can't really say how complex the plot is) but what keeps me at it is the continued discovery of more superb graphics and I suspect many 'non-adventurers' will be converted by this. There are a few gripes, such as a limited vocabulary and the wait for each scene to load from disk as a screen is exited but the program as a whole is so far ahead of any other graphics or arcade adventures that these must be considered just nitpicking. Mind you with a hard disk think how fast it would be!

Les Ellingham tries the next generation of Adventures

THE BLACK CAULDRON

The Black Cauldron continues the style but shows immediately how the programmers have learned from their experiences in programming for the ST. Kings Quest II is very, very good but The Black Cauldron is much better. The major improvement is that the whole game can be played with the mouse which improves the flow of the game considerably. Whilst it does inhibit the type of response you can give to each situation I found it to be altogether more enjoyable. One problem with the 'hybrid' games that use both joystick and keyboard is that it is often awkward to keep changing between the two but The Black Cauldron overcomes this splendidly. That's not the only thing that is better, the graphics are much improved, the animation slicker and there is much more movement of secondary characters. These are not major changes but subtle improvements that give this game a much classier feel.

The story is based on the Walt Disney film of the same name and your enjoyment of the adventure will depend to a degree on whether you like the Walt Disney style of cartoon. I have not seen the film, and would not go out of my way to do so, but still found the game to be quite enjoyable. This is true fantasy having been based on one of a series of books by Lloyd Alexander and, whilst written for children, has many of the elements of Tolkein. The story is basically the search by a small boy Taran for The Black Cauldron to stop it falling into the hands of the evil Horned King. Aided and abetted by Hen Wen, a pig with magic powers, he must find The Black Cauldron and stop the Horned King from capturing Hen Wen who alone has the power to locate the cauldron. If it

PRO-PASCAL
Prospero Software

Reviewed by Mark English and Adrian Merwood.

The PASCAL programming language was developed by Niklaus Wirth during the early 1970's. It was primarily designed as a teaching language encouraging the use of structured programming techniques. Although primarily developed for use in education the language has been adopted widely in Industry and a PASCAL compiler now exists for almost every make of computer. An international standard for the Pascal language has been defined by the International Standards Organisation (ISO), which also developed a suite of validation programs which are used to demonstrate that the compiler conforms to the standard.

THE COMPILER

PRO-PASCAL is a full implementation of Pascal conforming to the requirements of the ISO standard (ISO 7185). The compiler also includes a number of language extensions. These include string handling, double precision floating point arithmetic (IEEE format), random access files and separate compilation facilities. To assist the writing of portable Pascal programs an option is available to prohibit the use of these extensions.

The compiler runs from the Desktop as a TOS application and as such makes little use of GEM facilities. Compilation speed is quite good. The compiler requires two passes to compile a source program to produce a link file. During compilation messages are displayed showing the progress of the compiler through the source file along with any errors encountered. The messages produced may be optionally written to a log file. The error messages produced are quite explicit giving an error number and displaying the line that is in error. The compiler produces link files in the widely used GST Linker format. It is possible to link Pascal routines with routines written in assembly language and PRO-Fortran 77.

The disk supplied includes the Pascal compiler, the linker, a system configuration program, a librarian program to enable the creation of custom libraries, a number of linkable libraries, and a program cross-referencer. Also included is PRL (the Prospero Run-time Library) in the form of a separate program which must be executed before the compiler suite will function. This is identical to the run time system used by Prospero's Pro-Fortran 77 compiler. We share the reservations expressed by Matthew Jones in his review of Pro-Fortran in issue 22.

THE LIBRARIES

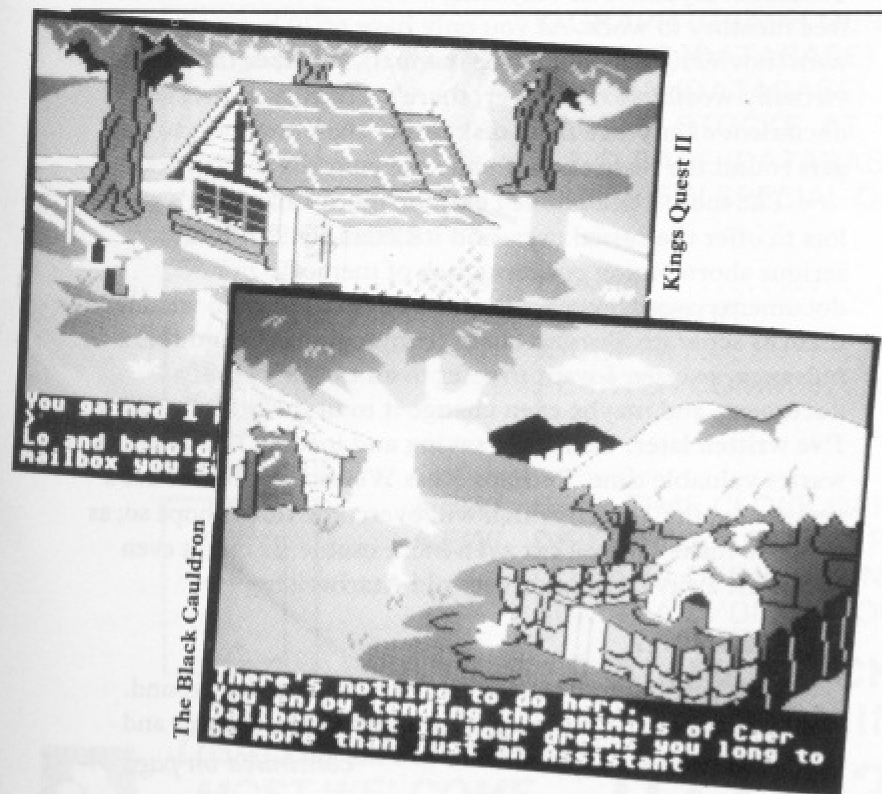
The libraries included with the compiler include routines giving full access to the GEM AES and VDI, and GEMDOS. The routines supplied closely resemble the standard C function naming conventions as described in the GEM documentation. User alterable bindings to these routines are supplied on the system disk. Additional routines include memory management, random TEXT files, program chaining etc...

THE MANUAL

The manual comes in a smart blue ring binder. It comprises three main sections. The first gives fairly good introduction to the Pascal language, although a beginner would probably require a good Pascal teaching guide. The second section gives a detailed description of the Pro-Pascal implementation of the Pascal Language. This section includes a guide to the use of the supplied library functions, including the various GEM calls. The third section covers the installation and operation of the various elements of the Pro-Pascal system.

CONCLUSION

Pro-Pascal is a good implementation of the Pascal language which includes a number of useful routines to enable the programmer to produce powerful systems making full use of the facilities made available by the ATARI machines. At £130 the compiler, though not as cheap as some, is good value for money. ●



Kings Quest II

The Black Cauldron

sounds too childish, don't let that put you off. If you have children, buy it for them (or pretend to). If you don't, who cares what people think, buy it anyway.

The class of this game extends to the packaging for bound into the gatefold box is a beautiful 18 page booklet, in full colour, illustrated with scenes from the movie. It really is splendid. And you get a map of the kingdom as well as sundry other papers to help you play or advertise other Sierra products.

With these two games, Sierra On-Line have opened up a new era in computer games, with the promise of even better things to come. At last we are approaching the true use of the home computer as an art form in its own right. Almost interactive cartoon, not quite but pretty close. These have to rank way up at the top for the way in which they use the graphics of the ST and you may well look back on them in the future as examples of a new departure in computer games.

Sierra On-Line products are now distributed in the U.K. by Mirrorsoft so these should be easily available from your local dealer or by mail order. ●

HOMEPAK
Batteries Included/Ariolasoft

Reviewed by John S. Davison

What do you get when a well known games author turns his attention to producing a serious application package for the 8-bit Ataris? When that author is Russ Wetmore of Preppie fame, the result should be something special, and it is. Originally released in the USA by Batteries Included, HomePak has now arrived in the UK by courtesy of Ariolasoft, priced at £34.95.

HomePak is not one, but three programs. It consists of HomeText, a word processor, HomeFind, an unusual database program, and HomeTerm, a telecommunications program. They're 'integrated' to a certain extent, allowing you to merge items from HomeFind into a document you're preparing with HomeText, or use HomeText to edit files and messages you've received via HomeTerm.

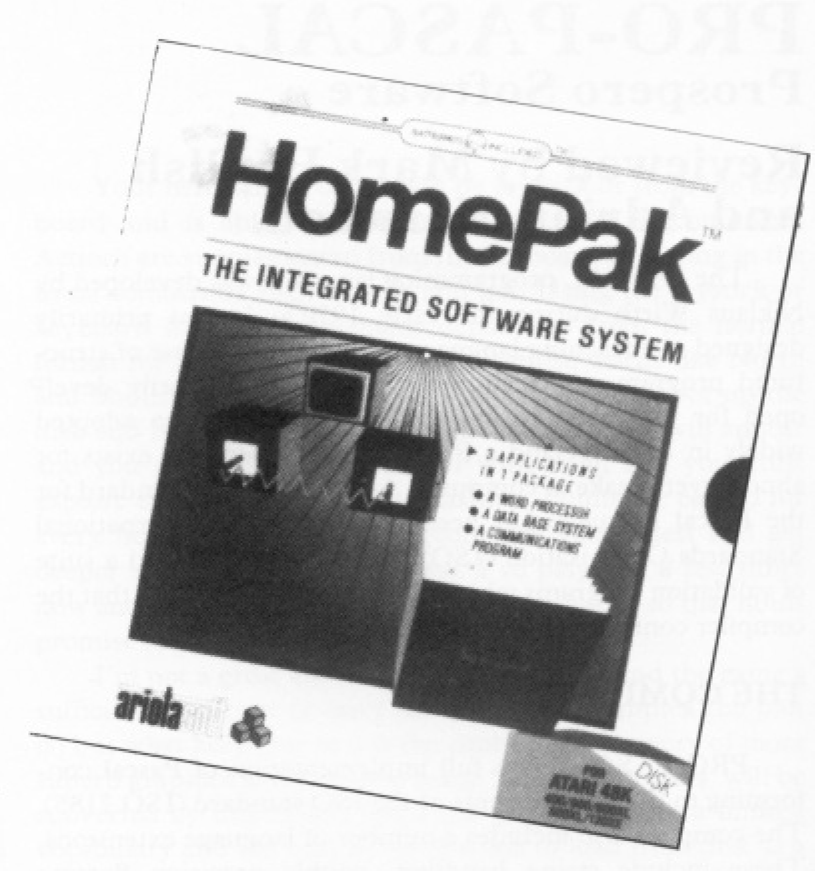
Integration applies to the 'human factors' aspect, too. They all have the same visual style, use similar (slightly zany) audio and visual prompts and messages, and all permit you to set the physical characteristics of the screen to your liking, such as background colour and brightness, and text brightness. All three programs are very friendly, using windowed menus and lots of helpful messages when you need them. The bottom few lines on the screen are used for displaying messages, prompts, and current program settings, with actual details varying by program.

HomePak comes packaged in a black plastic box, rather like the library box you get when you buy 10 blank disks. This has a smart, colourful slip-on cardboard cover. Inside you find a single sided disk containing the programs, and an instruction manual. This manual is physically small, measuring about 3.5″ by 5.5″ and contains 62 pages (but no index!) printed in a tiny font. The printing is rotated through 90 degrees, so you have to turn it sideways and open it away from you to read it. Its small size and method of binding ensure it won't stay open at the page you want. Physically, it's a bit of a disaster.

HOMETEXT

This is a medium level word processor, falling between the ultra simple such as Cut & Paste, and the heavyweights like PaperClip and Letter Perfect. It has most of the facilities you're likely to need for general home use. It's got a good range of editing facilities, with all of the expected features present. Extras include cursor skip to start or end of line, screen or document, auto wordwrap, and choice of insert or overwrite modes. Pressing the START key calls up a small window containing a menu for block move, copy and delete functions. Search and replace is also accessible from here. You're guided through the operations by on screen messages, so you can't really go wrong.

Text formatting codes are accessed from a windowed menu. Unlike most word processors, HomeText doesn't put unfriendly control codes into your text. It inserts an abbreviation of the command in inverse video, so you can tell at a glance exactly what it means. It does all the usual things, like indenting, set margin, line and page size, and line spacing, centring, blocking and justifying. Your text can be printed boldface, extended, or underlined, with facilities for customising the codes for your printer. Any other special



requirements, like alternate fonts, have to be done with raw printer codes. This is a pity, as it detracts from the general ease of use of the program.

Further choices allow you to force end of page, specify page headers, footers, page numbering, page wait (for single sheet paper), and chain to another file. You can also merge in data from HomeFind, giving you a mail merge facility, should you need it. Sadly, there's no automatic paragraphing, one of the few facilities missing.

Another windowed menu provides file manipulation options, such as load, save, delete, directory display, and append another file to the one currently in memory. You can also preview or print the current file from here.

The preview facility is handled graphically. Instead of showing your text, words are represented as black lines, with special features such as underlining shown in different colours. This is not the same as having a full text preview facility, but it seems to work quite well for checking overall document layout. The only snag is that it needs 5400 bytes of free memory to work. As you only have 6620 bytes to start with (not 8350 as stated in the manual), it makes the feature virtually worthless. However, there's a facility to preview a document of any size from disk rather than memory, so this gets round the restriction if you save your file to disk first.

The more I use HomeText, the more I like it. It's got lots to offer the casual user, and it's friendly. The only serious shortcoming concerns lack of memory. For documents over about 3 pages you have to resort to writing them as separate files and chain them together. I find this a nuisance, as often I want to refer to an earlier part of a document, and maybe even change it to fit in with something I've written later. Continual saving and loading separate files wastes valuable time. Perhaps Russ Wetmore will produce a version for the 130XE which will overcome this. I hope so, as it would make HomeText even more usable. It might even tempt me away from my trusty old Atariwriter.

HOMEFIND

This just has to be the most friendly database around. You don't have to know anything about fields, records and

continued on page 34

indexing – all HomeFind needs to know is the relationship between a subject and its data, and the data itself. You set up and make queries on the database with virtually plain English commands, with most other activities available from menus or by prompts from the program at the appropriate time. It's relatively limited as database programs go, but its ingenious design makes it a delight to use, especially for people who normally find computers a little intimidating.

Creating your database couldn't be easier. It's harder to describe than to actually do it! The data and its relationships are input in a simple three part form, like this:

Subject's Tag's Object
where:
Subject identifies the person or item to which the data refers,
Tag identifies the subject's relationship with the data following, and
Object is the data itself.

The apostrophe and s on the end of subject and tag are important, as they tell HomeFind where the subject and tag end. They also facilitate the use of plain English for input. Let's look at a few examples to see how it works.

Imagine we want to set up a database of our friends. We'd probably want to hold their names, addresses, phone numbers, and other personal details. Straight away we can begin entering the data, in any order, with our own choice of tag name:

Mike's surname's Taylor
John's surname's Burton
Bill's surname's Wooton-Smythe

If a subject or tag aren't already in the database, HomeFind responds with a cheery 'news to me!' message, and you choose whether to add it or not. This process is repeated for each line of data input. If a subject and tag already exist, then HomeFind handles the data immediately without further user interaction.

You might decide to enter addresses next, so your input could look like this:

Mike's address's 1, High St, Bingham

This time the subject's already in the database, so HomeFind can handle it. However, address is a new tag so you get a prompt for permission to add. In this way you can add any detail with any tag to build up a collection of related data about each of the subjects. You don't have to have the same tags for all subjects, just include whatever you want to suit your purpose. And that's all there is to setting up a basic database!

You can update your database at any time. To add new subjects or tags, simply enter them as described above. There's also a facility for adding object data to data already there, or for replacing old object data with a new version.

Deletions were a bit of a puzzle, as the manual doesn't say anything about removing obsolete data! It seems you achieve it using a variant of the replace data procedure, in effect giving each tag null data. Subjects and tags having only null data then have to be physically deleted by 'compressing' the database, available via one of the menu options.

HomeFind's data retrieval features are as simple to use as the data input facilities. To display all object data about a given subject, for example Mike, you need only type:

Who's Mike?
HomeFind replies with:

Mike's surname's Taylor
Mike's address's 1, High St, Bingham
Mike's birthday's 15 January
Mike's computer's Atari 130XE

and so on.

You can ask for any detail, using the words 'what', 'when', 'where' or 'who'. For example:
when's Mike's birthday,
what's Mike's computer,
and HomeFind will reply with the appropriate detail. Actually, the words 'what', 'when', etc. are only included for clarity – the retrieval works without them.

Retrieval can also be achieved using the tag alone, the object alone, or the tag and object. For instance, you could key in 'who's computer's Atari 130XE', and get a list of all subjects with an Atari 130XE. Or you could enter 'computer' and get a list of all subjects with a computer. Regrettably, there's no wild card feature, a serious omission reducing the usefulness of HomeFind somewhat.

HomeFind's print facilities consist of a printer ON/OFF toggle! The printer lists 'relevant' screen output, i.e. it prints what goes to the screen, but filters out prompts, error messages, and the like. There are no facilities for producing customised reports or address labels directly, but you can extract data and write it out as a DOS file. This can then be loaded into HomeText and processed as you wish.

HomeFind is not meant to be a full blooded database program, being limited in scope and facilities. But it's elegant, friendly and very easy to use, and could be all you need for basic home or school applications.

HOMETERM

HomeTerm was designed for use in the USA. Unfortunately, for UK use it's lacking in certain essential areas, these being modem interfacing and split transmission rates for use with Prestel, Micronet, and other services using 1200/75 split baud rates.

I tried using it with the Miracle Technology Datatari interface and WS2000 modem and could get no further than the initial screen displaying the message 'Modem Error!'. Pressing any key after this resulted in the reloading of the HomePak main menu. Calls to Ariolasoft produced no solution, but they promised to run tests with the Datatari and call me back. To date I've had no reply.

The instruction manual says HomeTerm's designed for use with Atari 835 and 1030 modems, which aren't available here. You can also use other modems via the Atari 850 serial interface, but this device seems to be as rare as hen's teeth in the UK. It mentions the set up procedure required for the MPP modem (again, USA only), which uses a custom R: handler to emulate the 850's RS-232 handler. It seems likely that something similar's required for the Datatari. Anyone out there know of one?

For the review, the best I can do is to describe HomeTerm's facilities without the benefit of practical experience. At least this will be helpful to the lucky few with an 850 interface at their disposal.

HomeTerm has three operational screens. One is for interactive use, when you're online to another computer. This has some nice features, like automatic wordwrap to prevent breaking a word across two lines, and a 120 character edit buffer into which you can key your message, and edit it before transmission. The other two screens are menus, one being the Functions Menu from which you control the program's main functions, such as file upload/download, etc. The third screen is the Files Menu, giving you a 'mini-DOS' facility. This allows you to format a disk, list directory, or copy, delete, rename, lock or unlock a file, all without leaving HomeTerm.

HomeTerm handles transmission rates of 300 or 1200 baud only, in full or half duplex mode. It can also handle four different transmission coding methods/protocols, these



being standard ASCII for general use, ATASCII for use when sending Atari special characters, inverse text, etc., Vidtex for use on the USA's famous CompuServe Information System, and Xmodem file transfer protocol for uploading/downloading of files to/from other computers.

Files of any length can be transferred via upload/download. HomeTerm automatically segments outgoing or incoming files into 7K (buffer sized) chunks, interrupting the transmission to load from or write to disk as required. The buffer can also be used to capture anything appearing on the screen. Then you can dump it to disk or printer for later reading, or back to the screen for instant review.

HomeTerm has a number of other good features, including a real time resettable clock for timing those long distance calls, and a macro facility for automating regularly used character sequences, such as for logon.

So that's HomeTerm. On paper it looks excellent, but until the interface problem gets fixed, there's no way of knowing for sure. As far as I can tell, the only thing it lacks is split baud rate for Prestel type services, and this may be important to some people.

CONCLUSIONS

HomePak is a fine suite of software. Given a working version of HomeTerm, you get three eminently usable applications for less than £12 each, a bargain in anyone's terms. If Ariolasoft could fix the interface problem, provide Prestel support, and do something about that awful manual, the package would be unbeatable. Even without, it's still a very good buy.

CUT & PASTE
Electronic Arts/Ariolasoft

Reviewed by John S. Davison

Cut & Paste is one of the growing number of word processors now released for the 8-bit Atari. It's produced by the much respected Electronic Arts of the USA, and is available to our American cousins on Commodore, Apple and IBM PC's as well as Atari. It's distributed in the UK by Ariolasoft, and costs £24.95.

Cut & Paste comes nicely packaged in a hard plastic box, which opens like a book to reveal two single sided disks and a glossy 27 page instruction manual. The program disk contains the Cut & Paste program, while the data disk contains a number of example documents. These include a letter, memo, and envelope layout, the idea being that you type your text over that in the example, so helping you get the correct format.

The manual isn't as comprehensive as it looks at first sight, as the first half of it contains four sets of instructions covering the four makes of computer mentioned above. The rest of the manual covers general topics common to all of them. It's easy to read, but going through it I got the feeling it must be missing out a lot of the program's facilities. Was this an oversight, or were they really missing? I decided to write this review using Cut & Paste to give it a practical test.

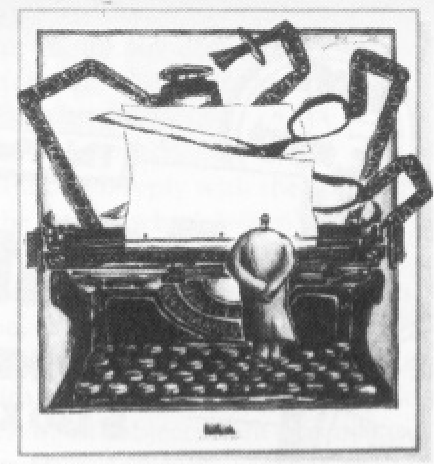
Booting up the program disk revealed instant friendliness – on screen instructions telling you what to do, and a menu bar along the bottom of the screen with options chosen using the arrow and RETURN keys. All the menu items are shown in inverse video, so to select a particular option you have to 'de-highlight' it with the cursor. I found this illogical and slightly irritating in use.

One of the design principles of Cut & Paste is that the commands you use most often are the easiest to perform. In practice, this means that you only have to press ESC to access the menu bar, then RETURN to perform the command, as the cursor is usually already positioned over the most used option on that menu. Full marks to the author for this piece of thoughtful design.

No marks for the next feature, though! Cut & Paste's files are held on disk in a non-standard format, and there's no facility provided for converting them to DOS files. This means you can't manipulate the files with DOS, process them with other utilities such as spellcheckers, or merge them with Atariwriter files. This, frankly, is appalling. Unnecessary use of custom formats is currently a pet hate of mine.

The fun really began when I tried to enter text on the edit screen. Like Atariwriter, Cut & Paste operates in insert mode, so correcting mistakes involves deleting characters rather than typing over them. But incredibly, Cut & Paste doesn't use the delete key – you have to backspace over a character to delete it. I found this very clumsy and unnatural in practice. In fact, the only other editing keys which work are the arrow keys. Attempts to use anything else elicit a noise like a half strangled chicken from the speaker!

For deleting larger amounts of text you could use the much vaunted cut and paste feature from which the program takes its name. The feature does work quite well, allowing you to mark text, cut it into a buffer, and then paste it back into your document at any point (multiple times if you wish).



The text stays in the buffer until you make another cut, or clear the buffer manually. It also stays there across a document load, so you can cut from one document, load a new document in, and then paste the buffer contents into it – a nice touch.

To begin the review I wanted a centred, underlined title. Horrors – there's no centring function, or any way of underlining! I like to begin paragraphs with a 5 character indent on the first line only, and separate the new paragraph from its predecessor with blank lines. Cut & Paste can't do this automatically either, you have to do it by hand. There is an indent facility, but it indents whole paragraphs. You can't use it for smaller units of text.

Having keyed in the review, I wanted to preview it on the screen. Not possible. OK, so print it out. Selecting PRINT from the menu bar brings up a full screen print menu. This has the usual facilities for modifying margin and page sizes, line spacing, page numbering, number of copies, and single/continuous stationery selection. You can also supply a page header at this point, but not a footer. Unfortunately, the header is not stored on the document file, so next time you load and print the document, you have to remember to type in the header again.

One of the few good points in Cut & Paste's favour is its handling of 'widows and orphans'. These are terms used in the publishing industry – you may not have heard them before, but if you've used a word processor, you almost certainly know them by sight. A widow is the last line of a paragraph which annoyingly prints as the first line on the next page. An orphan is the converse of this, when the first line of a paragraph prints as the last line on a page. Both give your printout an untidy appearance. You normally have to deal with them manually, but Cut & Paste automatically detects and corrects them. Also, if it finds a single line paragraph it assumes this could be a heading for the paragraph following, and ensures both are printed on the same page. This I like!

There are no facilities for right margin justification, or for selecting fonts or other special features your printer may offer. If you want to use a Near Letter Quality font for your final copy, hard luck!

A feature I find essential in a word processor is the search feature. Without it, locating a particular point in a document can be very tedious and time consuming. Guess which word processor doesn't have this feature? Right!

I find it difficult to raise any enthusiasm for this program. Its few good points are far outweighed by its many bad ones. In action, it seems closer to an electronic typewriter than a computerised word processor. But then on the front of the box it does call itself 'The Remarkably Simple Word Processor'. If you want something on which to compose the odd letter or page of notes, then Cut & Paste could be for you. For anything more complex, though, you would be much better off with one of the many other word processors now available for the 8-bit Ataris. ●

Review

Solo Flight
Microprose
(distributed in the U.K. by U.S. Gold)
48K disk or cassette

Solo Flight received a full page review in Issue 17 and I was not therefore going to review this slightly enhanced re-release, however I booted it up just to have a quick look and was so enthralled that I just had to write something!

I have tried several flight simulators in the past and have found almost all of them to be virtually impossible due, it must be said, more to my impatience and inability than to any program design faults. So it was with the usual resignation to half an hour's frustration that I pressed START to begin my flight. To my amazement and joy, it was easy! An in-flight instructor 'talks' you through each stage of the flight and by following his instructions and checking your instruments, you can fly! I took off, climbed, banked and generally flew around before re-approaching the runway to attempt a landing. With the instructor talking me down I approached the runway, lowered landing gear, applied flaps and missed the approach! Never mind, pull back on the stick, increase throttle and come round again for another try. This time, with some finer controls and a little more experience, I landed. Brakes on, engine off and there I was back on the runway. It really gave me a sense of achievement and was quite one of the best little episodes on the Atari that I have had for some time.

The program includes much more advanced flying and you can switch off the instructor. There is also a Mail Pilot game included for you to practice your flying skills. The criticisms in the original review seem to have been attended to, the instrument panel for instance is easy to read, and I would not hesitate to recommend this to anybody.

If you want to experience the thrill of flying with a simulator that you really can fly first time, then this is the one to go for. Believe me it really is a joy!

Les Ellingham

WARGAMER WANTED:
Do you have a good collection of wargames? Could you write an overview of wargaming on the Atari? As well as paying for the article, we will send review copies of any war games simulations we receive to the author of the article accepted for publication. Interested? If so, get in touch with the Editor now.

SMOOTHER DLI's

Paul Lay shows how to get rid of the keyboard glitch

If you have written any programs that use Display List Interrupts, you may have noticed that you often get 'flashes' or interference with the DLI when using the keyboard or during other processing. This is a well-known problem and has come to be known as 'the keyboard glitch'. It seems strange that no one seems to have figured out a way of programming round this. Consider the following extract from Mapping The Atari.

"One small problem with using DLI's is that the keyboard 'click' routine interferes with the DLI by throwing off the timing, since the click is provided by several calls to the WSYNC register at 54282. Chris Crawford discusses several solutions in De Re Atari, but the easiest of them is not to allow input from the keyboard!"

That's not much use if you want a complex game to use the keyboard as well as a joystick, so let's have a look to see what else we can do. Firstly consider why the glitch occurs in the first place. It is because a STA WSYNC occurs in some other process which interferes with the DLI timing. During a DLI no other interrupts can occur so the interfering STA WSYNC must occur outside the DLI. If therefore we could synchronise directly to the display during a DLI, the glitch problem would be resolved. We can in fact do this by starting a DLI early, then waiting for the vertical line counter (VCOUNT) to reach the required scan line value before performing the normal DLI processing.

As an example, let's consider the case where a DLI is to alter the foreground and background colour registers in the middle of a Graphics 0 display. Firstly we must determine the value of VCOUNT for the scan line at which we wish our DLI routine to execute. VCOUNT operates in double line resolution and for every Graphics 0 mode line we increment VCOUNT by 4. After 12 Graphics 0 mode lines, therefore, VCOUNT will have been incremented by 4*12=48. The value of VCOUNT just before the first scan line is 15 and therefore the value of VCOUNT for the mid-point of the screen is 15+48=63. The following lines are inserted at the beginning of the DLI after saving any register values onto the stack.

```
SCANLINESYNC
        LDA VCOUNT
        CMP #63
        BNE SCANLINESYNC
        STA WSYNC
```

Notice that we have tagged a STA WSYNC onto the end. This is because VCOUNT operates in double line resolution and the loop therefore terminates one scan line too early (the STA WSYNC rectifies this).

All that now remains is to set where the DLI occurs in the display list. Normally for a DLI to occur in the middle of a Graphics 0 display we would set bit 7 of DL+16. The interrupt must now, however, occur some time before this so we set bit 7 of DL+15. It could in fact be set at any point prior to DL+16 but DL+15 is the most efficient in terms of processor utilisation.

The DLI timing problem is now solved, however there is a further problem with respect to DLI's which isn't often considered and that is all shadow registers are copied to their hardware counterparts during the non-critical stage of the Operating System's immediate VBI (where interrupts are enabled). If an IRQ occurs during this period, the hardware registers will not be updated. Thus if a colour register is altered in the middle of the screen and the hardware registers are not updated because an IRQ occurs, then that register will remain momentarily in the colour it was set to by the VBI.

We can overcome this easily by setting up our own immediate VBI to copy the shadow registers into the hardware registers, which is called by the operating system during its immediate VBI critical stage, and hence is always executed. This is how animation is performed whilst games are loading, for example on Activision's Decathlon or even Bignose Software's Sprong! In the example program I have given I have only updated the colour registers in my immediate VBI as these are all I have changed. If any other shadow

```
CS 1 REM ##########################################
YT 2 REM #      RESOLVING THE KEYBOARD      #
PU 3 REM #         GLITCH by Paul Lay        #
UP 4 REM #   PAGE 6 Magazine - England       #
CW 5 REM ##########################################
NL 6 REM
FY 10 REM POKE DLI & VBI into memory
LN 20 FOR I=1536 TO 1586:READ J
QY 30 POKE I,J:NEXT I
LS 40 GRAPHICS 0
SE 50 REM set DLI vector
TV 60 POKE 512,0:POKE 513,6
SA 70 REM modify display list
TA 80 DL=PEEK(560)+256*PEEK(561)
FQ 90 POKE DL+15,130
FQ 100 REM enable VBI & DLI
OW 110 I=USR(1576):POKE 54286,192
TE 120 LIST :? :? "LOOK NO GLITCHES!"
NW 130 END
XN 140 DATA 72,173,11,212,201,63,208,249,
   141,10,212,169,0,141,10,212,141,23,208
   ,169,218,141,24,208,104,64,162
DG 150 DATA 8,189,192,2,157,18,208,202,16
   ,247,76,95,228,104,160,26,162,6,169,6,
   32,92,228,96
```

registers are altered in a DLI then they too should be updated as part of the immediate VBI.

You will find a simple BASIC listing and the source code with this article. I hope that my explanation is not too confusing and that you can put the principles into practice in your own programs. Although it may seem complicated, it is basically only four machine code instructions added to a normal DLI together with a very straightforward immediate VBI.

```
1000  *=$0600
1010 ; **************
1020 ; * DLI routine *
1030 ; **************
1040 DLI
1050  PHA
1060 ; synchronise to the scan line
1070 ; counter
1080 SCANLINESYNC
1090  LDA VCOUNT
1100  CMP #$3F
1110  BNE SCANLINESYNC
1120  STA WSYNC
1130 ; and perform normal DLI
1140 ; processing
1150  LDA #$00
1160  STA WSYNC
1170  STA COLPF1
1180  LDA #$DA
1190  STA COLPF2
1200  PLA
1210  RTI
1220 ; **************
1230 ; * VBI routine *
1240 ; **************
1250 VBI
1260  LDX #$08
1270 LOOP
1280  LDA SHADOWREGISTERS,X
1290  STA HARDWAREREGISTERS,X
1300  DEX
1310  BPL LOOP
1320  JMP $E45F
1330 ; **************
1340 ; * set up VBI *
1350 ; **************
1360 SETUPVBI
1370  PLA
1380  LDY #VBI&$00FF
1390  LDX #VBI/$0100
1400  LDA #$06
1410  JSR $E45C
1420  RTS
1430 ; equates
1440 COLPF1            = $D017
1450 COLPF2            = $D018
1460 WSYNC             = $D40A
1470 VCOUNT            = $D40B
1480 SHADOWREGISTERS   = $02C0
1490 HARDWAREREGISTERS = $D012
```

SUPERCLOWN

by Michael Kempster

Help Super Clown! His fate is in your hands as you manoeuvre his trampoline to ensure that he can bounce up and burst the balloons. If he misses the trampoline, splat! Another clown will have to take his place but there are not that many clowns in the circus so take care. Super Clown is one of those addictive games, like Breakout, that will have you coming back for 'just one more try'.

TYPING IT IN

If you use a disk drive you need type in only the main listing and save it with a filename of your choice. Then just type RUN "D:yourfilename" and you're away. If you use cassette you can also just type the main listing using CSAVE and CLOAD as usual but you might like to also use the loader routine in Listing 2 which gives you a display and will automatically run the main program. If you want to use this loader, type it in first and save it to tape with SAVE "C:". Then type in the main listing and save it immediately after the first listing using CSAVE. Rewind the tape and type RUN "C:". The programs will automatically load and run.

Whichever way you save the game, make sure you use TYPO 3 to check the listings.

PLAYING THE GAME

A brief title screen will appear while the graphics are defined followed by the playing screen and the words PRESS START. You may change levels at this stage by pressing the SELECT key. Every two levels the trampoline will shorten and more points per balloon can be scored. To begin play press either START or the fire button on the joystick.

At the start of the game, the clown jumps off the trampoline and up towards the rows of balloons. You can control his direction by moving the trampoline before the clown bounces off. Moving the trampoline to the left will make the clown go leftwards as he bounces up and moving the trampoline to the right will make him go right. Just for a change, the clown will sometimes bounce straight down from a balloon instead of at an angle, so be prepared.

Extra lives are awarded, depending on the level, at 1500, 2500 and 3500 points but this will depend at what level you start.

You do not have to burst all the balloons. When 8 are left the next level begins and the trampoline is shortened. To pause a game just press any key and use the fire button to restart.

That's it. Good luck, enjoy the game, and see if you can beat my high score of 13,000!

```
EI 1 REM ******************************
VJ 2 REM *       SUPER  CLOWN         *
LR 3 REM *            by              *
LR 4 REM *   Michael    Kempster      *
EC 5 REM * -------------------------- *
IZ 6 REM *  PAGE 6 MAGAZINE - ENGLAND  *
EO 7 REM ******************************
NN 8 REM
IM 10 GOTO 3000
LM 50 IF STRIG(0)=0 THEN RETURN
SX 60 GOTO 50
HQ 99 REM MAIN LOOP
HP 100 S=STICK(0)
JH 105 IF PEEK(764)<>255 THEN POKE 764,25
   5:GOSUB 50
KD 110 IF S>9 AND S<12 THEN 140
KT 120 IF S>4 AND S<8 THEN 160
SG 130 FOR N=0 TO 7:NEXT N:GOTO 170
SU 140 BAT$=BATL$:POSITION BX,20:? BAT$:B
   X=BX-1.25:M=-1:IF BX<1 THEN BX=1
OP 150 GOTO 170
RS 160 BAT$=BATR$:POSITION BX,20:? BAT$:B
   X=BX+1.25:M=1:IF BX>ED THEN BX=ED
FC 170 POSITION BX,20:? BAT$
ES 200 COLOR 32:PLOT MXI,MYI:POSITION BX,
   20:? BAT$:MXI=MXI+MX:MYI=MYI+MY:LOCATE
    MXI,MYI,Z:COLOR 193:PLOT MXI,MYI
RM 210 IF Z=66 THEN MY=-1:MX=M:FOR N=16 T
   O 0 STEP -4:SOUND 0,150,10,N:NEXT N:GO
   TO 100
WT 220 IF Z=59 OR Z=60 OR Z=189 OR Z=62 T
   HEN 400
QL 230 IF MXI<2 OR MXI>36 THEN MX=-MX
XA 240 IF MYI<4 THEN MY=1
TL 250 IF MYI=21 THEN 700
LT 260 GOTO 100
RO 399 REM BALLOON POP
TL 400 MY=-MY:IF RND(0)>0.7 THEN MX=0
SI 410 BAL=BAL-1:SC=SC+LV
RK 420 FOR N=16 TO 0 STEP -4:SOUND 0,50,8
   ,N:NEXT N
YX 430 POSITION 6,1:? SC
HG 440 IF BAL=8 THEN GOSUB 600:GOTO 660
KL 499 REM EXTRA MAN
YN 500 IF SC=1500 OR SC=2500 OR SC=3500 T
   HEN CL=CL+1:POSITION 35,1:? CL
SZ 505 IF SC=1500 OR SC=2500 OR SC=3500 T
   HEN FOR N=0 TO 15:SOUND 0,N,10,N:NEXT
   N:POKE V0,0
LM 510 GOTO 100
DT 599 REM NEXT LEVEL
CP 600 COLOR 32:PLOT MXI,MYI:PLOT 1,20:DR
   AWTO 37,20:SCR=SCR+1
IV 605 IF SCR=0 THEN BATR$="  BBBBBB":BAT
   L$="BBBBBB  ":LV=10:ED=30
XF 610 IF SCR=1 THEN BATR$="  BBBBB":BATL
   $="BBBBB  ":LV=20:ED=31
FG 630 IF SCR=3 OR SCR=4 OR SCR=5 THEN BA
   TR$="  BBBB":BATL$="BBBB  ":LV=30:ED=3
   2
IZ 640 IF SCR>=6 THEN BATR$="  BBB":BATL$
   ="BBB  ":LV=50:ED=33
MS 650 BAL=72:MXI=20:MYI=20:MX=-MX:MY=-1:
   BX=16:BAT$=BATR$:POKE 77,0:RETURN
QN 660 FOR N=6 TO 0 STEP -0.1:SOUND 0,200
   ,10,N:SOUND 1,100,10,N:SOUND 2,150,14,
   N
CT 670 POKE V0+1,N:POKE V0+2,N:NEXT N:POK
```

```
    E V0,0:POKE V0+3,0:POKE V0+2,0:GOSUB 1
    000
MB 680 GOTO 100
UC 699 REM MAN LOST
OC 700 CL=CL-1:COLOR 32:PLOT 1,20:DRAWTO
    37,20:PLOT MXI,MYI:IF CL=0 THEN 800
OD 720 RESTORE 750:FOR TU=1 TO 8:READ N:F
    OR D=16 TO 0 STEP -0.6:SOUND 0,N,10,D:
    NEXT D:NEXT TU
LH 730 MXI=20:MYI=20:MY=-1:MX=-MX:BX=16:P
    OSITION 35,1:? CL:POKE 77,0:GOTO 100
NK 750 DATA 171,191,203,227,171,191,203,2
    55
MN 799 REM GAME OVER
YL 800 POSITION 5,0:? "xwyj  pzjk"
TL 810 RESTORE 860:FOR TU=1 TO 8:READ N:F
    OR D=16 TO 0 STEP -0.7:SOUND 0,N,10,D:
    NEXT D:NEXT TU:POKE V0,0
VY 820 IF SC>HI THEN HI=SC
IQ 830 FOR N=1 TO 10:? CHR$(28);"       xwy
    j  pzjk":FOR I=1 TO 50:NEXT I
IT 840 ? CHR$(28);"      XWYJ  PZJK":FOR I
    =1 TO 50:NEXT I:NEXT N
KH 850 GOTO 2000
UO 860 DATA 255,255,227,227,211,171,191,2
    55
MY 999 REM DRAW SCREEN
ZI 1000 GRAPHICS 0:POKE 559,0:POKE 708,25
    5:POKE 709,15:POKE 710,122:POKE 711,54
AP 1010 POKE 756,CHSET
UF 1020 DL=PEEK(560)+256*PEEK(561)
OQ 1030 POKE DL+3,70:POKE DL+6,6
NE 1040 FOR I=7 TO 27:POKE DL+I,4:NEXT I:
    POKE DL+28,6:POKE DL+29,65
ZP 1050 POKE DL+30,PEEK(560):POKE DL+31,P
    EEK(561)
GG 1055 POKE 87,0:POKE 82,0:POKE 752,1
LR 1060 POSITION 5,0:? "dfgjkmnpqt"
YI 1070 POSITION 0,1:? "SCORE:        HISC
    ORE:          LIVES:"
IZ 1080 POSITION 6,1:? SC:POSITION 21,1:?
     HI:POSITION 35,1:? CL
CA 1090 COLOR 191:PLOT 0,2:DRAWTO 38,2:CO
    LOR 192:PLOT 0,3:DRAWTO 0,21:PLOT 38,3
    :DRAWTO 38,21
VR 1100 FOR N=2 TO 36 STEP 2:COLOR 59:PLO
    T N,4:COLOR 60:PLOT N,8:COLOR 189:PLOT
     N,6:COLOR 62:PLOT N,10:NEXT N
BW 1120 COLOR 193:PLOT MXI,MYI
VL 1130 POSITION BX,20:? BAT$:POKE 559,34
AT 1160 RETURN
VM 1999 REM TITLE SCREEN
EV 2000 SC=0:CL=3:BX=16:MXI=20:MYI=20:MX=
    1:MY=-1:BAL=72:SCR=0:ED=30:LV=10:V0=53
    761
RI 2010 BATR$="  BBBBBB":BATL$="BBBBBB  "
    :BAT$=BATR$:GOSUB 1000:POSITION 16,12:
    ? "LEVEL ";SCR
QH 2015 POSITION 4,0:? "GKJDD DUWKU":SOUN
    D 0,100,10,4:SOUND 1,200,10,8:POKE 537
    68,1
ZQ 2020 ? CHR$(28);"    gkjdd duwku":FOR
    I=1 TO 50:NEXT I:? CHR$(28);"    GKJDD
     DUWKU":FOR I=1 TO 50:NEXT I
DO 2025 IF PEEK(53279)=5 THEN GOSUB 2200
YC 2030 IF STRIG(0)<>0 AND PEEK(53279)<>6
     THEN 2020
FV 2040 POSITION 4,0:? " dfgjkmnpqt ":POK
    E V0,0:POKE V0+2,0:POSITION 15,12:? "
         "
NI 2050 GOTO 100
RU 2199 REM LEVEL SELECT
RF 2200 GOSUB 600:POSITION BX,20:? BAT$:P
    OSITION 22,12:? SCR:IF SCR>6 THEN SCR=
    -1
KM 2210 SOUND 0,110,10,10:SOUND 1,200,10,
    10:SOUND 2,150,10,10:FOR N=0 TO 20:NEX
    T N:SOUND 0,0,0,0:SOUND 1,0,0,0
IV 2220 SOUND 2,0,0,0:POSITION 0,1:RETURN
YG 2999 REM 1ST TITLE SCREEN
AD 3000 GRAPHICS 18:POKE 708,255:POKE 709
    ,15:POKE 710,122:POKE 711,54
PZ 3010 DL=PEEK(560)+PEEK(561)*256:POKE D
    L+8,6:POKE DL+14,6
UN 3020 POSITION 2,0:? #6;"paramountain":
    POSITION 11,1:? #6;"software"
AO 3030 POSITION 6,3:? #6;"presents":POSI
    TION 4,6:? #6;"SuPEr CLoWN 2"
AR 3040 POSITION 9,9:? #6;"by":POSITION 2
    ,11:? #6;"MiChAeL  kEmPsTeR"
XI 29999 REM DEFINE CHARACTERS
AS 30000 DIM M$(32),CHAR$(50),BAT$(8),BAT
    R$(8),BATL$(8)
AW 30010 CHSET=PEEK(106)-8:CH=256*CHSET:R
    ESTORE 30100:FOR I=1 TO 32:READ A:M$(I
    )=CHR$(A):NEXT I
JJ 30020 A=USR(ADR(M$),57344,CH):CHAR$="0
    123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUV
    WXYZ":FOR I=1 TO LEN(CHAR$)
AM 30030 CHPOS=CH+(ASC(CHAR$(I))-32)*8:FO
    R A=0 TO 7:READ B:POKE CHPOS+A,B:NEXT
    A:NEXT I
SW 30040 GOTO 2000
JN 30100 DATA 104,104,133,213,104,133,212
    ,104,133,215,104,133,214,162,4,160,0,1
    77,212,145,214
VG 30110 DATA 200,208,249,230,213,230,215
    ,202,208,240,96
YA 30120 DATA 252,204,204,204,252,252,252
    ,0
AG 30130 DATA 48,240,48,48,48,48,252,0
MG 30140 DATA 252,12,12,252,192,192,252,0
SJ 30150 DATA 252,12,12,60,12,12,252,0
DD 30160 DATA 192,192,192,204,252,12,12,0
GA 30170 DATA 252,192,192,252,12,12,252,0
ZO 30180 DATA 252,204,192,252,252,204,252
    ,0
KZ 30190 DATA 252,204,12,12,12,12,12,0
TE 30200 DATA 252,204,252,204,204,204,252
    ,0
WK 30210 DATA 252,204,204,252,12,12,12,0
IM 30220 DATA 0,8,8,0,12,12,0,0
CN 30230 DATA 60,255,251,255,255,60,4,1
JZ 30240 DATA 20,85,93,85,85,20,8,2
CV 30250 DATA 60,255,251,255,255,60,4,1
JU 30260 DATA 40,170,174,170,170,40,12,3
SP 30270 DATA 175,175,175,175,250,250,250
    ,250
OD 30280 DATA 130,130,130,190,190,130,130
    ,130
AL 30290 DATA 32,32,168,32,32,136,136,0
KW 30300 DATA 0,0,255,170,170,255,0,0
MZ 30310 DATA 168,136,128,128,192,204,252
    ,0
KC 30320 DATA 63,127,96,127,7,127,126,0
EL 30330 DATA 168,160,160,168,240,240,252
    ,0
SE 30340 DATA 119,119,119,119,127,127,62,
    0
NC 30350 DATA 126,115,127,126,112,112,112
    ,0
GO 30360 DATA 136,136,136,168,252,204,204
    ,0
CF 30370 DATA 168,32,32,32,48,252,252,0
TU 30380 DATA 127,120,126,120,120,127,127
    ,0
PE 30390 DATA 126,115,127,126,119,119,119
    ,0
PK 30400 DATA 128,128,128,128,192,252,252
    ,0
YU 30410 DATA 63,112,112,112,112,127,63,0
OO 30420 DATA 112,112,112,112,112,127,127
    ,0
LV 30430 DATA 168,136,136,136,252,252,252
    ,0
UZ 30440 DATA 62,119,119,119,127,127,62,0
UQ 30450 DATA 99,99,107,127,127,127,99,0
IF 30460 DATA 168,136,136,168,224,204,204
    ,0
OR 30470 DATA 168,128,170,168,12,12,252,0
HI 30480 DATA 115,123,127,127,127,119,115
    ,0
NV 30490 DATA 127,127,62,62,62,62,62,0
RI 30500 DATA 136,136,136,136,252,252,48,
    0
GK 30510 DATA 28,62,115,127,115,115,115,0
HT 30520 DATA 63,112,112,119,115,127,62,0
ZP 30530 DATA 99,127,127,127,107,99,99,0
MA 30540 DATA 115,115,115,115,127,62,28,0
```

```
EI 1 REM *****************************
DT 2 REM * SUPER CLOWN - Cassette Load *
DA 3 REM *  ------------------------   *
IX 4 REM *  PAGE 6 MAGAZINE - ENGLAND  *
EM 5 REM *****************************
NL 6 REM
JX 10 GRAPHICS 18:DL=PEEK(560)+PEEK(561)*
    256:POKE DL+9,6:POKE 708,15:POKE 709,2
    02
WX 20 POSITION 7,4:? #6;"LOADING
                  super clown 2"
TS 40 FOR I=1536 TO 1554:READ A:POKE I,A:
    NEXT I:POKE 764,12:A=USR(1536)
VD 50 DATA 162,253,154,169,183,72,169,84,
    72,169,4,32,182,187,169,255,76,4,187
```

F.C.C. Systems'

PRINTER INTERFACE

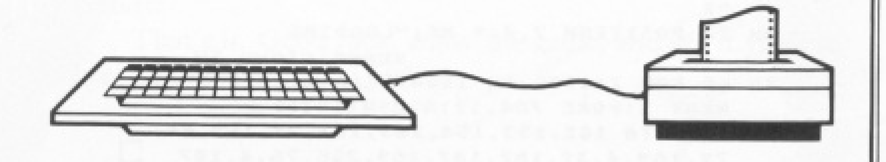
A while ago there were a number of interfaces around for connecting your Atari computer to a non-Atari printer but most of them seem to have disappeared or have become very hard to locate. Atari's own 850 interface has an almost mystical quality of suddenly disappearing from the face of the earth, returning in 'plenty' and just as mysteriously disappearing again. So what are we left with?

One of the interfaces which has been around for some time now comes from FCC Systems but one or two disparaging comments seem to have been made about it, so we borrowed one from Wootton Computers to test. Compared to the 850, it is almost miniature, comprising of a standard cable with the interface built into one end which plugs into the printer. This part measures just 60mm × 65mm × 20mm and is quite unobtrusive behind the printer. The cable is a generous 4 feet 6 inches and should cause you no problems with any of your peripherals. The only point to bear in mind is that it must be the last in a 'chain' of peripherals as there is no additional I/O outlet. This will only cause problems however for those with the old style 410 cassette recorders. It works perfectly well plugged into any of the I/O ports, even that on the 850 Interface!

The only way to see if an interface is suitable is to print different characters through it. It had no problems in handling all 256 ATASCII characters sent individually to the printer and was able to successfully handle graphics in the form of the listings used in the magazine as well as screen dumps from different graphics modes. These were tried on an Epson RX80 as well as a totally non-Epson compatible NEC 8023A. No problems at all with either.

So what rumours there have been about the unsuitability of this interface seem to have been dispelled. There is no reason to suspect that you will have problems. There is no additional software, just plug it in and forget it. That is exactly how an interface should behave!

The FCC Interface costs £59.95 and is available from Wootton Computers in Crewe, from your local dealer or direct from FCC Systems.



Don't lose your programs

VERIFY!

One of the problems that cassette based systems suffer from is loading errors. That 32K masterpiece that you have just CSAVE'd just won't load, and unfortunately pressing RETURN just ONCE after typing CLOAD deletes the program currently in memory. No chance to try again!

The utility presented here will help ensure the loading ability of your tapes WITHOUT the loss of the original program, which will remain in memory for you to try again if necessary.

FOR BASIC AND BASIC XL!

Listing 1 is the Basic XL version. If you have this fine language then you will need no explanation of how it works, and for the less fortunate the program should be clear. I would point out though that Dpeek(88) is the same as PEEK(88)+256*PEEK(89) in Atari BASIC, which is the start of screen write memory.

Listing 2 is the Atari BASIC version. Please be sure that you type in the correct version. Although listing 2 will function just as well under BASIC XL, *listing 1 will not work with the Atari BASIC.*

A problem with Atari BASIC is the slowness of I/O using the cassette. Using GET or INPUT requires that cassettes have long gaps between records to allow processing time, during which the motor may stop. The long gaps (LIRG or Long Inter Record Gaps) allow the motor time to reach the correct speed before the next record is reached. On the other hand, tapes produced with CSAVE have short gaps, SIRG. It follows, then, that the GET command will not be able to process such tapes. We have to use GET for this form of data access rather than INPUT as the former allows us to read data without regard to whether there are any carriage returns, which will terminate INPUT. The machine code routine poked in on Page 6 empties the cassette buffer rapidly enough so that when the routine is called again by the loop, the Operating System thinks that BASIC has finished processing the information contained within the buffer, so rapidly that there is no requirement for LIRG.

Listing 3 is the source program for the machine code. You do not type in this program, it is provided merely for those readers interested in machine code. Please note that this routine is not relocatable as it contains internal jumps. Reassemble it to a different origin if this is required.

When you have typed in the listing, save it on tape using LIST "C:". BASIC XL users should note that strings in quotes are not converted to normal uppercase by the editor, so ensure that you enter filespecs in capitals when they follow LIST statements where quotes are mandatory. I like to enter my listings in lowercase!

Atari BASIC and BASIC XL listings by Derryck Croker

```
0 Graphics 0:Close #1:Open #1,4,128,"C:":
  Trap 2
1 Bget #1,Dpeek(88),128:Goto 1
2 Position 0,6:If Err(0)=136 Then ? ,"Tap
  e verified!":Poke 712,195:Goto 4
3 ? "     Tape read error ";Err(0);" has o
  ccurred!":Poke 712,50
4 Close #1:Trap 40000:End
```

Listing 1 – BASIC XL

```
WE 0 RESTORE 7:FOR A=1536 TO 1555:READ ML
   :POKE A,ML:NEXT A
TO 1 DLST=PEEK(560)+256*PEEK(561):POKE DL
   ST+5,2
IT 2 CLOSE #1:OPEN #1,4,128,"C:":TRAP 4
JV 3 FOR A=1 TO 49152 STEP 128:GET #1,DUM
   MY:X=USR(1536):NEXT A
MN 4 GRAPHICS 0:IF PEEK(195)=136 THEN ? ,
   "↓↓Tape verified!":POKE 712,195:GOTO 6
AW 5 ? "↓↓Tape read error ";PEEK(195);" h
   as occurred!":POKE 712,50
UJ 6 CLOSE #1:TRAP 40000:END
AM 7 DATA 104,174,138,2,134,61,160,0,185,
   0,4,200,196,61,240,3,76,8,6,96,
```

Listing 2 – ATARI BASIC

CHECK FIRST!

Check the loading ability of the tape by issuing a RUN command, rewinding the tape and press PLAY and Return. The tape will load into the first 128 bytes of screen memory (listing 1) or the cassette buffer will be shown screen centre (listing 2) and will continue until the End Of File (EOF) is reached or a fatal error condition is detected. In this case you will not be able to load the tape later.

If you do run into trouble then check that the heads, capstan and pinchwheel are clean and try again. 400/800 users may like to type LPRINT (without a printer present), and ignore the resulting error message before resaving the program as above. This helps overcome a bug in the OS which results in the occasional presence of garbage in the cassette buffer. Rerun the program until you are satisfied with the results.

continued overleaf

```
10 ;Equates
20 BLIM   =   $028A ;# active bytes
30  ;in cassette buffer,
40  ;read from marker of each record
50 CASBUF = $0400 ;cassette buffer
60 BPTR   =  $3D    ;pointer to current
70  ;byte being read or written
80        *=  $0600
90        PLA        ;reqd by BASIC
100       LDX BLIM   ;# bytes in buff
110       STX BPTR   ;pointer to byte
120       LDY #$00   ;init index
130 READ  LDA CASBUF,Y ;get byte
140       INY        ;bump up index
150       CPY BLIM   ;same as #bytes?
160       BEQ OUT    ;yes
170       JMP READ   ;no,back for more
180 OUT   RTS        ;out to BASIC
190       .END
```

Listing 3 – Source Code

VERIFY IN USE

Using the utility is very simple. After saving your masterpiece to tape, ENTER the utility so that it merges with the program in memory. If your program uses lines 0-4 (listing 1) or 0-7 (listing 2) then you will have to renumber it first. Issue a RUN and repeat the checking process as described above. You will be informed on the status of the recording as appropriate. Restore the screen borders to normal with RESET before re-running the utility.

A tape reporting a load error may be dealt with as discussed, however this time you will have to remove the utility's lines from your program before resaving it.

Inveterate adventure clue seekers may like to know that they can also use this utility to search through any length of tape for help! ●

MAKING NOISES...

Two sound systems reviewed by Alan Goldsbro

DIGIDRUM/ DIGISYNTH
2 Bit Systems
£4.95

Would you like to convert your computer to a programmable drum system or sequencer?

DIGIDRUM is menu driven, the majority of controls are obtained by using the main function keys. OPTION gets a selection from the main menu which is permanently displayed across the top of the screen. With each press of the button, the highlighted cursor moves from one option to another, left to right. SELECT gets an option from the active pull down menu and START executes that option. Using these pull down menus may look cute but unless you've got a mouse to flick over them they really aren't much good. I found them slow and cumbersome, if you miss your option first time round then it's back to continually pressing the Option button until its highlighted again. I was constantly frustrated by this procedure which I feel detracts from the ease of use. Don't let my inability to handle this system put you off this program however, as I enjoyed my time as a drummer.

All the sounds you hear within the program were digitised using the 'Replay' Sound Sampling System from the same authors. The eight drum sounds all 'recorded' at 10KHz are, Bass-Drum, Snare, Lowtom, Midtom, Cowbell, Hi-hat open, Hi-hat closed and Clap. DigiDrum can store up to 29 different patterns using any combination of the drum sounds, these can be constructed, edited and played at different tempo's. DigiSynth employs the same method as DigiDrum except that the rate is recorded at 16KHz.

Within DigiDrum there are numerous sections all connected to give you hours of enjoyment by constructing, editing and compiling patterns to make songs. Functions include, selection from any of 29 Patterns, Wiping (erase), Editing, Playing, changing the Tempo and linking patterns to form Songs. All the patterns and songs can be stored on either disk or tape. If you have a disk drive, a catalog can also be displayed thus enabling easier selection. Up to 16 files can be stored on disk although the programmers don't employ the same procedure here as they do with the menu. With the menu all you do is highlight your option and press START. When loading files though, you have to type in the filename and press return. I can't work out why they don't use the same principle as the menu.

I would have liked the opportunity to send my patterns to the printer so further study could be easier, however, at this price I'm not going to make a song and dance about it.(!) The manual is a small cassette inlay size typeset document which is quite readable but it lacks in-depth information and clarity and I found some of the instructions a little vague.

DIGISYNTH is not as complex as DigiDrum but is still an effective program. Employing the same design structure (and faults) it can handle such functions as entering Music, Editing, Erasing, Tempo, Playback and Filing.

Entering the notes is achieved by using the bottom two rows of the keyboard. Editing is by real time use of delete and cursor control keys. As with DigiDrum whatever you do is seen on screen immediately through a little grey window, in fact in this program there are windows popping up and down all over the place and what's more I could'nt seem to get rid of them. Never mind you always get to see what you are doing.

You will probably have realised by now from the lack of detailed musical comment that I know nothing about those funny little things like notes, staffs, sharps and rests but I did thoroughly enjoy myself creating as yet another unfinished masterpiece!!

The manual is part of the DigiDrum manual and again is a little sparse. The disk comes packaged in the now almost standard hard vinyl case. All in all though DigiDrum and DigiSynth are well worth £4-95 and when you've got tired of trying to beat your last score playing that arcade game you could always come back to this and write a different type of score!

REPLAY SOUND SAMPLING SYSTEM
2 Bit Systems

Real music from your computer?? Spoken words with clarity??

The Replay Sound System consists of a plug-in cartridge and disk or cassette based software comprising of the main program (Replay), sample sound files and supportive programs. All the sounds in the DigiDrum/DigiSynth package are derived from this system. Replay allows you to produce high quality digital sound through your TV or Monitor speaker. Once a sound has been recorded it can be played back without the use of the Replay cartridge.

To create effective and realistic sounds a good quality tape recorder is required to play music or sounds so the Replay cartridge can 'record' it. The sounds can then be saved to either disk or tape. The cartridge comes with a lead about 18 inches long terminating in a small 3.5mm phono plug which should be inserted in any output socket of the recorder although the manual makes no reference to this whatsoever. I managed to plug it into the headphone socket after first getting a conversion unit as, like most recorders, the headphone socket was of a larger size than the phono plug supplied.

The Replay program itself employs the same 'modus operandi' as DigiDrum and DigiSynth. Functions include, Set-up, Wipe, Sample, Play and File as follows.

Set-up has three sub programs: Sample Rate – lets you select the 'recording' quality/time. Using the SELECT key you can choose to record your sample at six different levels from 6KHz (poor) to 21KHz (excellent). As the quality of the sound improves the less recording time you have available. For example with 6KHz you get 12 seconds and at 21KHz there are only 3 seconds of recording time, but what a superb 3 seconds they are!! Storage – just toggles the disk/cassette option and Calibration – which is a handy section acting like a row of LED's to help you select the correct output level of your tape recorder.

Wipe – has exactly the same functions as in Digidrum.

Sample – having pre-selected the 'recording level' under the Set-up command this option records the input signal at the current sample rate. When Sample is selected, the signal from the tape player is audible through the TV. A 'Sample Length' indicator shows the amount of time available for the sample sound. Once the START key is pressed, the sample length starts to decrease and your sound is recorded.

Play – as it says, highlight the

option, press START and whatever file is loaded into memory is played through the TV speaker. The sounds produced can be altered by going to Set-up and changing the KHz rate.

File – this, in my opinion, is wrongly placed. Surely the file needs to be loaded first, then played? I can't understand why the Play option is placed before the File option which doesn't seem logical as you have to move the cursor right round the menu bar. File lets you load and save your sample sounds to disk or cassette and in the case of disk owners a Catalog is an additional feature.

Once a file has been loaded or recorded the sound waves appear in a window across the width of the screen giving a visual effect of your sounds. A nice feature here is an editor function which allows you to scroll from the start of the sound sample to the end. Markers can be placed anywhere between the start and end to let you either wipe the parts out you don't want or alternately save only the section between the markers. If you only use part of the time limit in 'record' you can add on more sounds by moving the editor markers and recording sound from that position. In this way it's possible to edit speech to your own requirements. As with any program that relies on other equipment to provide the conditions to enable it to operate the quality of sample sounds are dependant somewhat upon the quality of your tape recorder.

In addition to the main program there are demo sounds ranging from guitars to Captain Kirk in perfect voice! A seperate program is LISTed to disk to enable sample sounds to be included in your own programs. This comprises of a couple of machine code routines and all that has to be done is to find out the start and finish address of the sample and away you go.

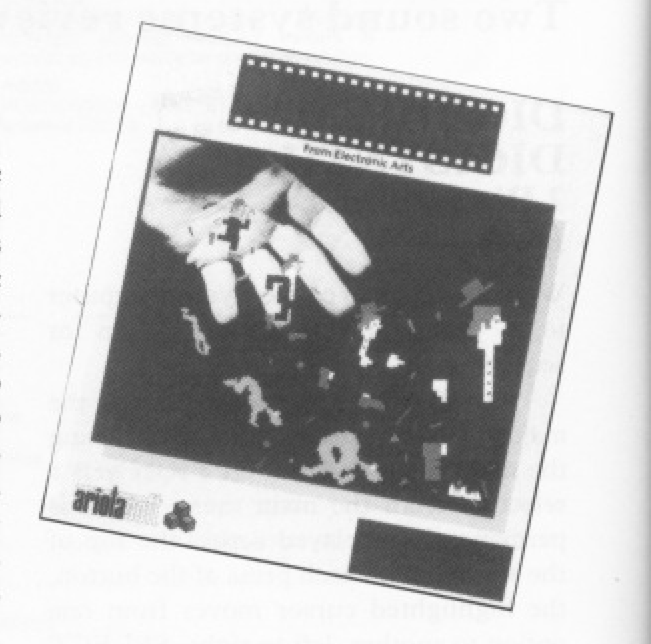
The package comes in a plastic case reminiscent of a video box with a 12 page manual and even a wooden dowel for the 400/800 cartridge lid which has to stay open to allow the lead to be plugged into the recorder. It is available for all 48K computers. For those who have friends going green with envy whilst you're creating sounds, there's something for them too, a simple space invader game as a freebie!

Replay Sound Sampling System will cost you £39.95 for either Disk or Cassette and is available from retailers or 2-BIT SYSTEMS themselves. The sampler was loaned by 2 BIT SYTEMS to whom I am indebted. One thing is for sure, I've no intention of being without the Replay Sound Sampling System for long, I'm off out now to buy one before they all get snapped up.

MAKING MOVIES

John Davison becomes a Movie Director

MOVIE MAKER
Electronic Arts/Ariolasoft



Here's a program package for people who enjoy using their computer as an aid to creativity. Belonging to the same class of software as AtariArtist and Music Construction Set, it gives you the electronic equivalent of a film animation studio, providing everything needed to produce your own animated video movies. The whole production process is covered, from creating background scenery and characters, through recording the action and adding the soundtrack, to the final screening of the finished product.

It comes in a glossy cardboard package containing two double sided disks and an instruction manual. The package opens like a book and the centre is printed with what looks like afterthoughts to the manual.

Movie Maker is complex, so a good instruction manual is essential. The 41 pages of instructions supplied get you proficient fairly quickly, thanks mainly to the tutorial section, however, the programs are driven by menus, keyboard commands and joystick, which can be confusing at times. Knowing what to do where takes a little practice.

Disk 1 contains the main production programs, and an autoplay program, which enables you to make a bootable disk capable of automatically showing any movie files you store on it. Also, six ready made movies are provided to give you a taste of what can be achieved. Disk 2 contains four partially completed movies, which you have to finish yourself before you can show them. But there's more – you also have the component parts used in making these movies, including sound and musical effects. You can use them to make your own movie without having to draw anything yourself, a fact exploited by the tutorial section of the instruction manual.

Making a Movie

In Movie Maker terms, a movie consists of a background against which up to six actors can play their parts, while up to four channels of sound effects and music enhance their performance. You build it using the four major departments of the studio, these being the Composing Room, Recording Room, Cutting Room, and Screening Room, corresponding to the four major functions of Movie Maker. You're helped by your electronic crew, including the Director, Cameraman, Soundman, Stage Manager and Art Department. These, of course, represent sub functions of the major areas mentioned above.

Composing Room

Your computer generated movie consists of two basic types of artwork, these being backgrounds and shapes. Backgrounds are exactly that – static scenery against which your characters move. Shapes are the basic elements of your animation, being images of your characters drawn in different positions to represent different stages of a given movement sequence. Shown rapidly in succession, they give the impression of animated movement.

The Art Department provides you with 14 functions for drawing backgrounds and shapes in up to four colours from a palette of 128. Line drawing is achieved with a joystick and/or cursor keys with keyed commands used to perform functions such as colour fill, colour change, and duplicate a shape. Other features include Mirror, to assist with symmetrical shapes, Zoom, for magnifying the image for detailed work, and

Scale, to automatically change the width or height of a drawn shape. Text may be entered from the keyboard, a nice feature, as drawing text by hand can be a painful experience. Unfortunately, there are no aids to help you draw circles or boxes, and no 'rubber-banding' of the type found in many computer art programs.

The Director and Cameraman handle functions relating to shape animation and movement, such as sequencing the shapes to create the animation effect, and speed of movement, amongst others. You rehearse the sequences with different settings until you get the effect you want. Then you get the Stage Manager to take you to the Recording Room, where each sequence is allocated to an actor for recording.

Recording Room

Here, you have what might be termed a six track video recorder, and a four track sound recorder at your command. Each video track can record the movements of one actor, the idea being to build up interactions between several actors one track at a time. While recording an actor, you can see any other actors you've already recorded, so it's relatively easy to synchronise the new actor's movements with existing action.

Recording capacity is 300 frames (individual images) per track, giving playback time up to about a minute depending on projection speed chosen. If you own a video recorder you can build up a longer movie by transferring several 300 frame sections to video cassette, from which they can be shown without a break.

When you finish recording a track, you can play back the movie including the track you've just recorded. If you don't like the result, you simply re-record all or part of the bad track – action on previously recorded tracks remains intact. The Cameraman can be very useful to you here. He can position the recording at any frame, play the recording forwards or backwards at any speed, and mark a frame so he can rewind straight to it from any point. He can also zoom in for a close-up of the image being recorded.

The Soundman helps you record up to four separate sound tracks, using predefined effects and musical sounds played from the keyboard. There's no facility for defining your own sounds – a pity, as the supplied ones are rather crude. As with video tracks, each sound track may be recorded separately, but all play back together in the finished movie.

Cutting and Screening Rooms

It's the Stage Manager's job to ensure your masterpiece is presented in the best manner. Here in the Cutting Room he smooths out any flicker or jerkiness in the animation, and helps you add fine scrolling titles and credits to the beginning and end. Then, having saved the final product to disk, he takes you to the Screening Room to see the fruits of your creativity. Even here there's a measure of control. Through the Director and Cameraman you can vary the speed of projection, and stop the movie at any frame. This can then be printed in colour on a Okimate printer, if you happen to own one.

Conclusions

Overall, this is an impressive package. It's fun to use (but hard work) and even has practical applications. How about using it to produce eye-catching animated advertisements in shops, notices at school or club meetings, or animated charts for educational or business use? The more you think about it, the greater the possibilities become. If you're interested in animation, why not give Movie Maker a try? I can recommend it. ●

WATER SKI SCHO

by Steve Hind

Water-Ski-School needs a 48K or 64K machine to create the machine code program. The cassette or disk created can be run on a 32K machine but not a 16K system.

THE GAME

It's your second week at the Water Ski School, the first week you had no problem skiing but this week its a bit different. The first problem are those ramps that you have to jump, but the worst problem is your boat driver has been taken sick and its up to you, while skiing, to drive the boat as well!

You control the boat by moving the stick while holding down the button. By not holding the button you are controlling the skier. The idea of the game is to move down the river with the skier jumping the ramps. The boat will sink if it hits anything. The skier will fall into the water if he hits anything apart from the ramp, which he has to hit centrally. Also, if the boat moves while the skier is jumping then he will be pulled over and fall into the water. You get 100 points for every jump, if you jump six ramps by the time you reach the river end then you go on to the next level. You are given four lives.

TYPING IT IN

The program is listed in the usual machine code loader style, developed by ANALOG magazine. It has one new feature. You will notice in the listing some lines saying 'BLANK', this is to save you typing a line of 90 zeros. The program will replace these with zeros when you run it.

Both cassette and disk users need to type in listing No 1. and SAVE or CSAVE a copy. You can also check it with TYPO. When you run the program you will need to answer whether you want cassette or disk, enter 0 or 1 and 'RETURN' and wait as it goes through the listing checking your typing. If an error message appears correct the line and try again. Once any mistakes have been corrected you will be asked to ready disk or cassette, do this and press 'RETURN'. The lines will now be read again and written to either cassette or disk.

The cassette version can be loaded by pressing 'START' while switching your computer on (holding OPTION is not necessary as BASIC is turned off by the game). Please note the cassette version requires a long tape, C30 or longer.

Disk users should type in Listing No 2. This will load and run the file created with Listing No 1. Listing No 2 should be saved on the same disk as Listing 1.

BACKGROUND

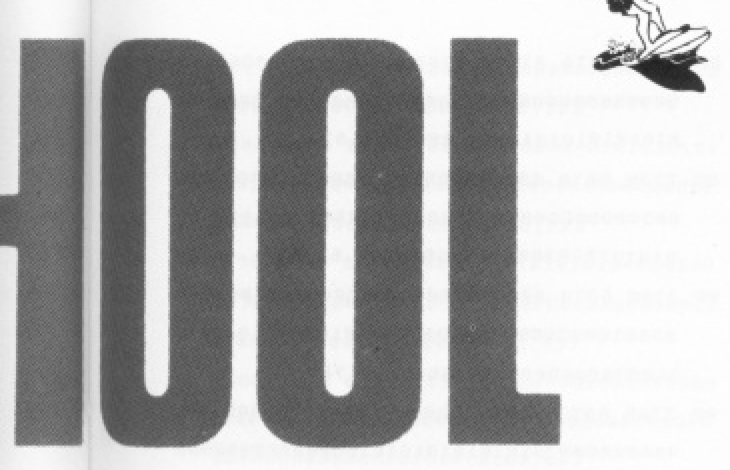
This game was originally written as an entry to a games writing competition of the Nottingham Microcomputer Club. It was written with the use of the MAC/65 assembler. I split the source code up into twelve small blocks which at assembly time were all put together with the .INCLUDE command. Splitting up a large piece of source code into blocks makes it easy to read and alter, not to mention the fact that the source code takes up about 450 sectors of a disk and so would not fit into memory all at once. I have purchased and used several assemblers and find the MAC/65 to be the best mainly due to its speed. If I put all the separate source code files for Water Ski School on the 130XE ramdisk I can assemble it in about 17 seconds, where as others can take up to 17 minutes.

If anyone would like access to the Source Code or would like to know more about the Nottingham Microcomputer Club then I can be contacted as follows: Steve Hind, 28 Chapel Lane, Ravenshead, Nottingham NG15 9DA. Tel. (0623) 795371.

```
IL 1 REM ########################################
SK 2 REM #       WATER SKI SCHOOL              #
NT 3 REM #              by                     #
MY 4 REM #          Steve Hind                 #
SR 5 REM #-------------------------------------#
GC 6 REM # PAGE 6 MAGAZINE - ENGLAND #
IR 7 REM ########################################
NN 8 REM
UL 9 REM LOADER ROUTINE FROM
      ANALOG MAGAZINE
KH 10 TRAP 10:? :? " CASSETTE (0), OR DIS
   K(1)";:INPUT DSK:IF DSK>1 THEN 10
RQ 20 DIM BL$(90):BL$="00000000000000000
   0000000000000000000000000000000000000
   000000000000000000000000000000000000"
UK 30 TRAP 40000:DATA 0,1,2,3,4,5,6,7,8,9
   ,0,0,0,0,0,0,0,10,11,12,13,14,15
LI 40 DIM DAT$(91),HEX(22):FOR X=0 TO 22:
   READ N:HEX(X)=N:NEXT X:LINE=990:RESTOR
   E 1000:TRAP 120:? "CHECKING DATA"
HG 50 LINE=LINE+10:? "LINE:";LINE:READ DA
   T$:IF LEN(DAT$)<>90 THEN 220
YC 60 DATLIN=PEEK(183)+PEEK(184)*256:IF D
   ATLIN<>LINE THEN ? "LINE ";LINE;" MISS
   ING!":END
LY 70 FOR X=1 TO 89 STEP 2:D1=ASC(DAT$(X,
   X))-48:D2=ASC(DAT$(X+1,X+1))-48:BYTE=H
   EX(D1)*16+HEX(D2)
FG 80 IF PASS=2 THEN PUT #1,BYTE:NEXT X:R
   EAD CHKSUM:GOTO 50
BG 90 TOTAL=TOTAL+BYTE:IF TOTAL>999 THEN
   TOTAL=TOTAL-1000
LR 100 NEXT X:READ CHKSUM:IF TOTAL=CHKSUM
    THEN 50
MO 110 GOTO 220
ZR 120 IF PEEK(195)<>6 THEN 220
EQ 130 IF PASS=0 THEN 170
MY 140 IF  NOT DSK THEN 160
IH 150 CLOSE #1:END
```

```
MY 5 REM WATER SKI SCHOOL LOADER
GK 10 OPEN #1,4,0,"D:WATERSKI.OBJ"
IL 20 POKE 850,7
VD 30 POKE 852,0:POKE 853,32
RO 40 POKE 856,255:POKE 857,255
SO 50 X=USR(ADR("hhh[illegible]LV[illegible]"),16)
TR 60 CLOSE #1:X=USR(10760)
```

Listing 2





```
ZY 160 FOR X=1 TO 56:PUT #1,0:NEXT X:CLOS
   E #1:END
IS 170 IF  NOT DSK THEN 200
DP 180 ? "INSERT DISK WITH DOS, PRESS RET
   URN";:DIM IN$(1):INPUT IN$:OPEN #1,8,0
   ,"D:WATERSKI.OBJ":GOTO 210
SG 200 ? "READY CASSETTE AND PRESS RETURN
   ";:OPEN #1,8,128,"C:":RESTORE 230:FOR
   X=1 TO 13:READ N:PUT #1,N:NEXT X
QS 210 ? :? "WRITING FILE":PASS=2:LINE=99
   0:RESTORE 1000:TRAP 120:GOTO 50
EN 220 IF DAT$="BLANK" THEN DAT$=BL$:GOTO
    60
NQ 225 ? "BAD DATA - LINE ";LINE:END
NB 230 DATA 0,110,243,31,8,42,169,60,141,
   2,211,24,96
GT 1000 DATA A9788D052D8D062DA9038D1DD0A9
   3E8D2F02A9008D08D08D09D08D0AD08D0BD0A9
   018D6F02A9008DC002A9498D,557
KP 1010 DATA C102A9F28DC202A9FF8DC302A920
   8D07D460A900AA9D00249D00259D00269D0027
   E8D0F1209254A9788D062D8D,601
DZ 1020 DATA 052D60A200BD00239D7824E8E016
   D0F5A200BD16239D7825E8E016D0F5A200BD2C
   239D7826E8E016D0F560A200,964
XB 1030 DATA BD42239DBE24E8E00ED0F5A200BD
   50239DBE26E8E00ED0F5A200BD5E239DBE27E8
   E012D0F560A900AA9D78249D,32
MG 1040 DATA 78259D78269D7827E8E017D0EF60
   A900AA9DBE249DBE259DBE269DBE27E8E013D0
   EF60000800EED720ADD720CD,855
BI 1050 DATA D820D03320C220A9008DD720ADD9
   201869088DD920C928D00DA9008DD920A9028D
   072D4C1821A000AED920BD70,528
AG 1060 DATA 2399C127E8C8C008D0F460000800
   EE1921AD1921CD1A21D03320AD20A9008D1921
   AD1B211869088D1B21C928D0,811
IY 1070 DATA 0DA9008D1B21A9028D072D4CAD20
   A000AE1B21BD7023997C27E8C8C008D0F46000
   00000000000000000000000000,65
JH 1080 DATA BLANK,65
JK 1090 DATA BLANK,65
IL 1100 DATA BLANK,65
IO 1110 DATA BLANK,65
IR 1120 DATA BLANK,65
IU 1130 DATA BLANK,65
IX 1140 DATA BLANK,65
JA 1150 DATA BLANK,65
JD 1160 DATA BLANK,65
KT 1170 DATA 000000000000000000000183C3C3C
   3C3C3C3C3C3C3C180000181 83C3C7E66C3C3
   C3C3C3C3C3C3C3C3C3C3E7E7,971
MZ 1180 DATA 7E7E000000000000183C2400000000
   000000000000000000000183C3C000000000018
   1818000000000000024242424,703
GT 1190 DATA 3C3C3C3C3C0000666666666666666
   666666666666666666666666600000000800000000
   00001C1C1C000000002A1C36,55
UE 1200 DATA 1C2A0000492A0063002A49004900
   004100004900000000000000000000000000000
   0000000000000000000000000,665
WB 1210 DATA BLANK,665
WE 1220 DATA BLANK,665
WH 1230 DATA BLANK,665
WK 1240 DATA BLANK,665
WN 1250 DATA BLANK,665
WQ 1260 DATA BLANK,665
WT 1270 DATA BLANK,665
WW 1280 DATA BLANK,665
WZ 1290 DATA BLANK,665
WA 1300 DATA BLANK,665
WD 1310 DATA BLANK,665
WG 1320 DATA BLANK,665
WJ 1330 DATA BLANK,665
WM 1340 DATA BLANK,665
WP 1350 DATA BLANK,665
WS 1360 DATA BLANK,665
WV 1370 DATA BLANK,665
WY 1380 DATA BLANK,665
XB 1390 DATA BLANK,665
WC 1400 DATA BLANK,665
WF 1410 DATA BLANK,665
WI 1420 DATA BLANK,665
WL 1430 DATA BLANK,665
WO 1440 DATA BLANK,665
XO 1450 DATA 000000000000000000000000000000
   000000000000000000005555555555555550000
   00000000000000003030D030D03,383
ZP 1460 DATA 030D0D0335030D03030335350D03
   030D3503030D0D3535D5350D5C5C70C07070C0
   7070C0C0705C5C7070705C5C,429
JZ 1470 DATA 5C5757575C70C0C070705C70C0AA
   AAAAAAAAAAAAAAAAAAAAAA5555555557D7D7F00
   4050575D5555570C30C05555,750
LB 1480 DATA 7D7DFD0001055555000000000000
   0000003C767676763C00001818181C1C1C0000
   3C760636707E00003C061E02,751
NO 1490 DATA 763C00006C6C6C7E0C00007E70
   7C06763C00003C607C76763C00007E0E187E18
   1800003C763C76763C00003C,553
YZ 1500 DATA 763E060606003C4299A1A199423C
   0000003C3C000000000000000000000055556F
   ABAB6F55555555FFAFFAFF55,845
VT 1510 DATA 555555FDAFFFFD5555000000000000
   000000001C3E76767E7600007C767C76767C00
   003C767070763C0000787C76,444
BV 1520 DATA 767C7800007E707C707070E00007E
   707C60606000003E70707676 3E000076767E76
   767600007E18181C1C7E0000,824
PH 1530 DATA 060606067E3C0000667C787C6C66
   0000606060707070E000063777F737373000072
   7A7E7E767200003C76767676,294
JC 1540 DATA 3C00007C76767C606000003C7676
   767C3600007C76767C6C6600003C707C0E0E7C
   00007E18181C1C1C00006666,226
KW 1550 DATA 6676767E0000666676763C180000
   63636B7F7773000066663C3C767600006C6C3C
   0C0E0E00007E0E1C3B707E00,221
UG 1560 DATA 55555556A5F55555555E5D5D5D5
   5555EAEAEAEAEAEAEAEAABABABABABABABABEA
   EAEAEA55555555ABABABAB55,425
QH 1570 DATA 555555A9018509A94A850A850C85
   02A952850B850D8503A9008D44024C74E40000
   000000000000000000000000,135
RT 1580 DATA BLANK,135
RW 1590 DATA BLANK,135
QX 1600 DATA BLANK,135
RA 1610 DATA BLANK,135
RD 1620 DATA BLANK,135
RG 1630 DATA BLANK,135
RJ 1640 DATA BLANK,135
RM 1650 DATA BLANK,135
RP 1660 DATA BLANK,135
RS 1670 DATA BLANK,135
IP 1680 DATA 0000000000000000000000000007070
   7042172C8265204D25252525252525A525258541
   002C010101010133342536 25,883
HB 1690 DATA 0128292E240101010 12E2F34342D
   012D2923322F01232C352201010101010101 01
   0133232F32251B1010101210,17
PG 1700 DATA 1001012C293625331B100F01012C
   2536252C1B10110101010100000000000000000
   0000000000000000000000000,602
QC 1710 DATA BLANK,602
QF 1720 DATA BLANK,602
CG 1730 DATA 000000000000000000000000000000
   0000000000000000000000000000000000000000
   00000000000000000000000700,609
HB 1740 DATA 01000178780200580000AD072DF0
   0BC9FFF077C902F0734C492EAD0A2DF010EE0A
   2DCD092DD008A9008D0A2DEE,840
XZ 1750 DATA 0B2DAD012DCD022DD008A9008D01
   2D4C802DEE012DAE002DF00ACE002DCA8E05D4
   4C0C2DA90F8D002D8D05D4D8,830
MD 1760 DATA 38AD082CE9288D082CAD092CE900
   8D092CC931D09BAD082CC9A0D094A9FF8D072D
   4C492EAD082DF010C902F006,528
MS 1770 DATA 20DA204C2B2E201C214C2B2EAD03
   2DCD042DD008A9008D032D4C2B2EEE032DAD84
   02C900F03CAD0A2DF0034C80,216
EW 1780 DATA 2DAD780209FBC9FBD01118AD062D
   6917CD052D90B5CE062D4C802DAD780209F7C9
   F7D0A618AD052D6917CD062D,959
GC 1790 DATA 909BEE062D4C802DAD780209FBC9
   FBD01720582ECE052D18AD052D6918CD062DB0
   03CE062D4C802DAD780209F7,324
YL 1800 DATA C9F7D0F420582EEE052D18AD062D
   6918CD052DB0E3EE062D4C802DAD052D8D00D0
   8D01D08D02D08D03D0A92E8D,232
JF 1810 DATA 0102A9688D0002A9C08D0ED48D1E
   D04C5FE4A906A00CA22D4C5CE4AD0A2DF00AA9
```

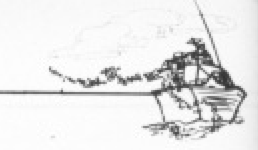


```
    018D082D68684C2B2E6048A9,659
NV 1820 DATA 7D8D0002A92E8D0102A9468D0AD4
    8D18D0684048A99C8D0002A92E8D0102AD062D
    8D0AD48D00D08D01D08D02D0,965
KX 1830 DATA 8D03D0684048A9688D0002A92E8D
    0102A9848D1AD0684000000000000000000000
    000000000000000000000000,176
VA 1840 DATA BLANK,176
VD 1850 DATA BLANK,176
VG 1860 DATA BLANK,176
VJ 1870 DATA BLANK,176
VM 1880 DATA BLANK,176
VP 1890 DATA BLANK,176
UQ 1900 DATA BLANK,176
XM 1910 DATA 0001010104000000000000000000
    000000000000000000000BD0ABE00000000000
    000000000701010101010103,588
XI 1920 DATA 0000000000000000009D9E9F0000
    0000000000BF0BC00000000000000000000006
    010101010101020000000000,470
NI 1930 DATA 0000000000000000000000000000
    00000000000000000000000000060101010101
    010500000000000000000000,487
SD 1940 DATA 0000000000000000000000000000
    00000000000000000009010101010103000000
    000000000000009D9E9F0000,979
ZB 1950 DATA 00000000BD0ABE00000000000000
    00000008010101010101040000000000000000
    0000000000000000000000BF,577
GZ 1960 DATA 0BC0000000000000000000000701
    01010101010500000000000000000000000000
    000000000000000000000000,798
MF 1970 DATA 0000000000000000060101010101
    030000000000000000000000C0D0E000000000
    000000000000000000000000,852
WE 1980 DATA 0000070101010101010300000000
    0000000000000000000000000000000C0D0E00
    000000000000000000000601,914
SP 1990 DATA 0101010104000000000000000000
    00000000000000000000000000000000000000
    000000000801010100000000,933
CH 2000 DATA 0000000000000000000000000101
    01020000000000000000000000000000000000
    000000000000000000000000,938
RD 2010 DATA 0000000601010101010105000000
    00000000000000000000000000009D9E9F0000
    000000000000000000000601,436
JH 2020 DATA 0101010101040000000000000000
    00000000000000000000000000000000000000
    000000000007010101010101,458
BN 2030 DATA 02000000000000000000BD0ABE00
    00000000000000000000000000000000000000
    060101010101010400000000,864
VM 2040 DATA 00000000BF0BC000000000000000
    00000000000000000000000000000701010101
    010102000000000000000000,273
BU 2050 DATA 0000000000000000000000000000
    00000000000000000006010101010101050000
    000000000000000000000000,290
WY 2060 DATA 0000000000000000000000000000
    00000000801010101010104000000000000000
    000000000000000000000000,308
QP 2070 DATA 0000000000000000000000000007
    01010101010105000000000000000000000000
    000000000000000000000000,326
KN 2080 DATA 000000BD0ABE0000090101010101
    01030000000000000000000000000000000000
    00000000000000000000BF0B,935
UR 2090 DATA C000000601010101010102000000
    00000000000000000000000000000000000000
    000000000000000000000801,150
JB 2100 DATA 0101010101040000000000000000
    0000000000009D9E9F00000000000000000000
    000000000007010101010101,646
NQ 2110 DATA 020000000000000000BD0ABE0000
    00000000000000000000000000000000000000
    090101010101010103000000,55
XH 2120 DATA 000000000BF0BC00000000000000
    00000000000000000000000000000701010101
    010102000000000000000000,464
VL 2130 DATA 0000000000000000000000000000
    00000000000000000009010101010101040000
    000000000000000000000000,483
PV 2140 DATA 00000000000000000000000000BB
    BC000000060101010101010200000000000000
    000000000000000000000000,872
RH 2150 DATA 0000000000000000000000000008
    01010101010103000000000000000000000000
    000000000000000000000000,889
MK 2160 DATA 0000000000000000070101010101
    01020000000000000000000000000000000000
    000000000000000000000000,904
HB 2170 DATA 0000000801010101010103000000
    00000000000000000000000000000000000000
    000000000000000000000601,928
RH 2180 DATA 0101010101050000000000000000
    00000000000000000000000000000000000000
    000000000009010101010101,953
VX 2190 DATA 04000000C0D0E000000000000000
    00000000000000000000000000000000000000
    080101010101010200000000,12
QU 2200 DATA 0000000000000000000000000000
    00000000000000000000000000000601010101
    010104000000000000000000,28
CD 2210 DATA 0000000000000000000000000000
    00000000000000000007010101010101020000
    0000000009D9E9F000000000,517
ZB 2220 DATA 0000000000000000000000000000
    00000000060101010101010500000000000000
    000000000000000000000000,534
FG 2230 DATA 0C0D0E0000000000000000000009
    01010101010102000000000000000000000000
    000000000000000000000000,590
KC 2240 DATA 0000000000000000070101010101
    01030000000000000000000000000000000000
    000000000000000000000000,606
LE 2250 DATA 0000000801010101010102000000
    00000000000000000000000000000000000000
    000000000000000000000901,632
ZF 2260 DATA 0101010101050000000000000000
    00000000000000000000000000000000000000
    000000000006010101010101,654
NW 2270 DATA 0300000000000000000000000000
    00000000000000000000000000000000000000
    070101010101010400000000,674
UH 2280 DATA 0000000000000000000000000000
    00000000000000000000000000000801010101
    010102000000000000000000,690
HP 2290 DATA 0000000000000000000000000000
    00000000000000000006010101010101040000
    000000000000000000000000,706
AD 2300 DATA 000000BD0ABE0000000000000000
    00000000070101010101010200000000000000
    00000000000000000000BF0B,312
KO 2310 DATA C000000000000000000000000006
    01010101010105000000000000000000000000
    000000000000000000000000,521
YG 2320 DATA 0000000000000000080101010101
    01020000000000000000000000000000000000
    000000000000009D9E9F0000,11
NX 2330 DATA 0000000601010101010105000000
    00000000000000000000000000000000000000
    000000000000000000000701,36
SP 2340 DATA 0101010101020000000000000000
    00000000000000000000000000000000000000
    000000000006010101010101,55
QV 2350 DATA 0200000000000000000000000000
    00000000000000000000000000000000000000
    060101010101010300000000,72
SO 2360 DATA 0000000000000000000000000000
    00000000000000000000000000000801010101
    010104000000000000000000,90
TP 2370 DATA 00000000BD0ABE00000000000000
    00000000000000000007010101010101050000
    0000000000000000000000BF,688
MO 2380 DATA 0BC0000000000000000000000000
    00000000090101010101010400000000000000
    000000000000000000000000,910
QB 2390 DATA 0000000000000000000000000008
    01010101010103000000000000000000000000
    000000000000000000000000,927
TU 2400 DATA 0000000000000000070101010101
    01020000000000000000000000000000000000
    000000000000000000000000,942
HP 2410 DATA 0000000601010101010104000000
    00000000000000000000000000000000000000
    000000000000000000000901,968
GA 2420 DATA 0101010101020000000000000000
    00000000000000000000000000000000000000
    000000000006010101010101,987
VM 2430 DATA 0400000000000000000000000000
    0000000000000000000000000000BD0ABE0000
    070101010101010500000000,398
QV 2440 DATA 0000000000000000000000000000
    000000000000000000BF0BC000000801010101
    010102000000000000000000,808
KP 2450 DATA 0000000000000000000000000000
    00000000000000000007010101010101030000
    000000000000000000000000,824
XC 2460 DATA 0000000000000000000000000000
    00000000090101010101010200000000000000
    0000009D9E9F000000000000,315
II 2470 DATA 0000000000000000000000000008
```



```
   0101010101010400000000000000000000000000
   00000000000000000000000000,333
IC 2480 DATA 000000000000000000070101010101
   0102000000000000000000000000BBBC0000000000
   00000000000000000000000000,723
KP 2490 DATA 000000060101010101010104000000
   9D9E9F00000000000000000000BBBC0000000000
   00000000000000000000000801,597
CX 2500 DATA 010101010105000000000000000000
   0000000000000000000000000000000000000000
   00000000000006010101010101,619
JM 2510 DATA 030000000000000000000000000000
   0000000000000000000000000000000000000000
   08010101010101020000000000,638
BS 2520 DATA 0000000000000000BBBC0000000000
   0000000000000000000000000000000901010101
   01010400000000000000000000,32
BV 2530 DATA 00000000000000BBBC000000000000
   0000000000000000000000070101010101030000
   00000000000000000000000000,422
NZ 2540 DATA 000000000000000000000000000000
   0000000009010101010101020000000000000000
   00000000000000000000000000,439
KA 2550 DATA 000000000000000000000000000008
   0101010101010400000000000000000000000000
   00000000000000000000000000,457
NR 2560 DATA 000000000000000000060101010101
   010300000000000000000000000000000000000C
   0D0E0000000000000000000000,511
AT 2570 DATA 000000070101010101010104000000
   0000000000000000000000000000000000000000
   00000000000000BD0ABE000801,926
DG 2580 DATA 010101010102000000000000000000
   0000000000000000000000000000000000000000
   00BF0BC0000601010101010101,339
HZ 2590 DATA 040000000000000000000000000000
   0000000000000000000000000000000000000000
   09010101010101020000000000,360
RX 2600 DATA 000000000000000000000000000000
   0000000000000000000000000000000601010101
   01010300000000000000000000,375
ZQ 2610 DATA 000000000000000000000000000000
   0000000000000000000701010101010101050000
   00000000000000000000000000,394
GV 2620 DATA 00000000000000000000000000009D
   9E9F000901010101010101040000000000000000
   00000000000000000000000000,888
SM 2630 DATA 000000000000000000000000000601
   0101010101010200000000000000000000000000
   0000000000000000BD0ABE0000,292
EV 2640 DATA 000000000000000000080101010101
   0105000000000000000000000000000000000000
   0000BF0BC00000000000000000,706
EC 2650 DATA 000007010101010101010101030000 00
   0000000000000000000000000000000000000000
   00000000000000000000060101,731
KX 2660 DATA 010101010102000000000000000000
   0000000000000000000000000000000000000000
   00000000000006010101010101,750
ZA 2670 DATA 040000000000000000000000000000
   0000000000000000000000000000000000000000
   07010101010101030000000000,770
MC 2680 DATA 000000000000000000000000000000
   00BBBC000000000000009D9E9F00000901010101
   01010500000000000000000000,639
KA 2690 DATA 000000000000000000000000000000
   0000000000000000000008010101010101030000
   000000000000BBBC0000000000,31
RZ 2700 DATA 000000000000000000000000000000
   0000000007010101010101050000000000000000
   00000000BD0ABE000000000000,438
EM 2710 DATA 000000000000000000000000000006
   01010101010102000000000000000000000000BF
   0BC00000000000000000000000,846
ZW 2720 DATA 000000000000000000070101010101
   0103000000000000000000000000000000000000
   00000000000000000000000000,862
RH 2730 DATA 000000060101010101010105000000
   0000000000000000000000000000000000000000
   00000000000000000000000901,889
MD 2740 DATA 0101010101020000BD0ABE00000000
   0000000000000000000000000000000000000000
   00000000000006010101010101,297
GF 2750 DATA 050000BF0BC0000000000000000000
   0000000000000000000000000000000000000000
   07010101010101020000000000,711
SO 2760 DATA 000000000000000000000000000000
   0000000000000000000000000000000601010101
   01010300000000000000000000,726
AB 2770 DATA 00000000BD0ABE0000000000000000
   0000000000000000000009010101010101040000
   000000000000000000000000BF,325
MP 2780 DATA 0BC000000000000000000000000000
   0000000007010101010101020000000000000000
   00000000000000000000000000,543
AW 2790 DATA 000000000000000000000000000006
   0101010101010300000000000000000000000000
   009D9E9F000000000000000000,32
AW 2800 DATA 000000000000000000080101010101
   0104000000000000000000000000000000000000
   00000000000000000000000000,50
HD 2810 DATA 000000070101010101010102000000
   0000000000000000000000000000000000000000
   00000000000000000000000601,72
XW 2820 DATA 010101010104000000000000000000
   000000000000000000000000BD0ABE0000000000
   00000000000007010101010101,483
KV 2830 DATA 030000000000000000009D9E9F0000
   00000000000000BF0BC000000000000000000000
   06010101010101020000000000,368
CU 2840 DATA 000000000000000000000000000000
   0000000000000000000000000000000601010101
   01010500000000000000000000,385
OP 2850 DATA 000000000000000000000000000000
   0000000000000000000009010101010101030000
   0000000000000000009D9E9F00,877
QU 2860 DATA 0000000000BD0ABE00000000000000
   0000000008010101010101040000000000000000
   00000000000000000000000000,284
RD 2870 DATA BF0BC0000000000000000000000007
   0101010101010500000000000000000000000000
   00000000000000000000000000,696
GD 2880 DATA 000000000000000000060101010101
   01030000000000000000000000000C0D0E00000000
   00000000000000000000000000,750
IU 2890 DATA 000000070101010101010103000000
   00000000000000000000000000000000000C0D0E
   00000000000000000000000006,811
EX 2900 DATA 010101010104000000000000000000
   0000000000000000000000000000000000000000
   00000000000008010101010101,834
JS 2910 DATA 020000000000000000000000000000
   0000000000000000000000000000000000000000
   06010101010101050000000000,853
UM 2920 DATA 000000000000000000000000000000
   0000000000000000000000000000000007010101
   01010300000000000000000000,868
VN 2930 DATA 000000000000000000000000000000
   0000000000000000000006010101010101020000
   00000000000000000000000000,882
PY 2940 DATA 0000000000000000000000000000BD
   0ABE000009010101010101030000000000000000
   00000000000000000000000000,289
HE 2950 DATA 000000000000000000BF0BC0000006
   0101010101010500000000000000000000000000
   00000000000000000000000000,700
TH 2960 DATA 000000000000000000060101010101
   0104000000000000000000000000000000000000
   00000000000000000000000000,716
UJ 2970 DATA 000000070101010101010103000000
   0000000000000000000000000000000000000000
   00000000000000000000000901,742
FP 2980 DATA 010101010104000000000000000000
   00000000000000BD0ABE00000000000000000000
   00000000000009010101010101,155
WJ 2990 DATA 050000000000000000000000000000
   00BF0BC000000000000000000000000000000000
   08010101010101030000000000,571
LT 3000 DATA 000000000000000000000000000000
   0000000000000000000000000000000007010101
   010105000000000000009D9E9F00,63
TR 3010 DATA 000000000000000000000000000000
   000000BBBC000000000006010101010101020000
   00000000000000000000000000,452
TZ 3020 DATA 000000000000000000000000000000
   0000000007010101010101030000000000000000
   00000000000000000000000000,468
GK 3030 DATA 000000000000000000000000000006
   0101010101010400000000000000000000000000
   00000000000000000000000000,484
SV 3040 DATA 000000000000000000080101010101
   0105000000000000000000000000000000000000
   00000000000000000000000C0D,528
HA 3050 DATA 0E0000060101010101010103000000
   0000000000000000000000000000000000000000
   00000000000000000000000701,565
HV 3060 DATA 010101010105000000000000000000
   0000000000000000000000000000000000000000
   00000000000008010101010101,589
YH 3070 DATA 020000000000000000000000BD0ABE
   0000000000000000000000000000000000000007
   01010101010101040000000000,998
OH 3080 DATA 000000000000BF0BC0000000000000
```





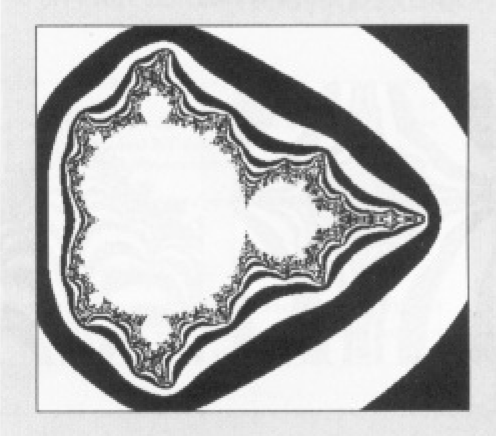
```
0000000000000000000000000000090101010101
010103000000000000000000,411
YS 3090 DATA 0000000000000000000000000000
BD0ABE00000000000801010101010101050000
000000000000000000000000,820
LA 3100 DATA 000000000000000000BF0BC00000
00000006010101010101010200000000000000
000000000000000000000000,229
GA 3110 DATA 0000000000000000000000000007
01010101010102000000000000000000000000
000000000000000000000000,244
PL 3120 DATA 0000000000000000060101010101
010500000000000000000000C0D0E000000000
000000000000000000000000,300
KU 3130 DATA 0000000901010101010104000000
00000000000000000000000000000000000000
000000000000000000000701,327
KX 3140 DATA 0101010101030000000000000000
00000000000C0D0E0000000000000000000000
000000000000090101010101,388
BM 3150 DATA 0200000000000000000000000000
00000000000000000000000000000000000000
000701010101010103000000,405
XO 3160 DATA 0000000000000000000000000000
00000000000000000000000000000001010101
010102000000000000000000,413
PM 3170 DATA 0000000000000000000000000000
00000000000000000008010101010101030000
000000000000000000000000,429
MR 3180 DATA 0000000000000000000000000000
00000000090101010101010102000000000000
000000000000000000000000,447
EO 3190 DATA 0000000000000000009D9E9F0007
01010101010101030000000000000000000000
000000000000000000000000,938
CY 3200 DATA 0000000000000000000901010101
01010400000000000000000000000000000000
000000000000000000000000,958
CM 3210 DATA 0000000601010101010101050000
00000000000000000000000000000000000000
000000000000000000000601,985
LW 3220 DATA 0101010101010200BD0ABE000000
00000000000000000000000000000000000000
000000000007010101010101,395
AD 3230 DATA 040000BF0BC00000000000000000
00000000000000000000000000000000000000
060101010101010102000000,807
OB 3240 DATA 0000000000000000000000000000
00000000000000000000000000000901010101
010105000000000000000000,827
CX 3250 DATA 0000000000000000000000000000
00000000000000000007010101010101040000
00000000000000000000009D,1
VF 3260 DATA 9E9F000000000000000000000000
00000000090101010101010300000000000000
00BD0ABE0000000000000000,725
VQ 3270 DATA 0000000000000000000000000006
01010101010102000000000000000000BF0BC000
000000000000000000000000,133
NW 3280 DATA 0000000000000000000801010101
01030000000000000000000000000000000000
000000000000000000000000,150
ON 3290 DATA 0000006010101010101010200000
00000000000000000000000000000000000000
000000000000000000000901,174
YA 3300 DATA 0101010101040000000000000000
00000000000000000000000000000000000000
000000000000060101010101,195
GX 3310 DATA 0200000000000000000000000000
00000000000000000000000000000000000000
070101010101010105000000,215
DQ 3320 DATA 0000000000000000000000000000
00000000000000000000000000000701010101
010102000000000000000000,230
DG 3330 DATA 0000000000000000000000000000
00000000000000000006010101010101040000
000000000000000000000000,246
TN 3340 DATA 009D9E9F00000000000000000000
00000008010101010101010200000000000000
000000000000000000000000,737
EH 3350 DATA 0000000000000000000000000009
01010101010103000000000000000000000000
00000000000000000000BBBC,130
MH 3360 DATA 0000000000000000000701010101
01040000000000000000000000000000000000
000000000000000000000000,147
TU 3370 DATA 0000007010101010101010200000
00000000000000000000000000000000000000
000000000000000000000601,169
KA 3380 DATA 0101010101020000000000000000
00000000000000000000000000000000000000
000000000000080101010101,190
WQ 3390 DATA 040000000000000000000C0D0E00
00000000000000000000000000000000000000
070101010101010102000000,248
DX 3400 DATA 0000000000000000000000000000
00000000000000000000000000000601010101
01010300000C0D0E00000000,302
IH 3410 DATA 0000000000000000000000000000
00000000000000000009010101010101020000
000000000000000000000000,319
XZ 3420 DATA 0000000000000000000000000000
00000000080101010101010104000000000000
0000000000009D9E9F000000,811
FB 3430 DATA 0000000000000000000000000701
0101010101020000000BD0ABE0000000000000
000000000000000000000000,215
MA 3440 DATA 0000000000000000090101010101
0300000BF0BC00000000000000000000000000
000000000000000000000000,627
JE 3450 DATA 0000060101010101010104000000
0000000000BBBC000000000000000000000000
000000000000000000000901,28
BT 3460 DATA 0101010101030000000000000000
00000000000000000000000000000000000000
000000000000060101010101,48
BZ 3470 DATA 0200000000000000000000000000
000000009D9E9F000000000000000000000000
070101010101010104000000,541
PM 3480 DATA 0000000000000000000000000000
00000000000000000000000000000601010101
010192000000000000000000,555
QD 3490 DATA 000000000000000000000C0D0E00
00000000000000000801010101010101030000
000000000000000000000000,611
BT 3500 DATA 0000000000000000000000000000
00000000070101010101010200000000000000
000000000000000000000000,626
UI 3510 DATA 0000000000000000000000000006
0101010101010500000000000000000000BD0A
BE0000000000000000000000,32
CI 3520 DATA 0000000000000000000901010101
010400000000000000000000BF0BC000000000
000000000000000000000000,445
SG 3530 DATA 00000006010101010101020000BB
BC000000000000000000000000000000000000
000000000000000000000701,842
OT 3540 DATA 0101010101040000000000000000
0000009D9E9F00000000000000000000000000
000000000000080101010101,339
MO 3550 DATA 0500000000000000000000000000
00000000000000000000000000000000000000
080101010101010300000000,361
AE 3560 DATA 0000000000000000000000000000
00000000000000000000C0D0E0000601010101
010102000000000000000000,414
VW 3570 DATA 00000000000000000000BD0ABE00
00000000000000000007010101010101050000
0000000000009D9E9F000000,295
HG 3580 DATA 0000000000BF0BC0000000000000
00000000060101010101010300000000000000
000000000000000000000000,704
VV 3590 DATA 000000000000000000BBBC000008
01010101010102000000000000000000000000
000000000000000000000000,95
QC 3600 DATA 0000000000000000000901010101
01040000000000000000000000000000000000
000000000000000000000000,114
YN 3610 DATA 0000000601010101010101020000
00000000000000000000000000000000000000
000000000000000000000701,136
HV 3620 DATA 0101010101020000000000000000
00000000000000BD0ABE000000000000000000
000000000000060101010101,544
NW 3630 DATA 0200000000000000000000000000
0000BF0BC00000000000000000000000000000
070101010101010500000000,958
AU 3640 DATA 0000000000000000000000000000
00000000000000000000000000000601010101
010102000000000000000000,972
LR 3650 DATA 0000000000000000000000000000
00000000000000000009010101010101040000
000000000000000000000000,991
TN 3660 DATA 0000000000000000000000000000
00000000060101010101010400000000000000
00BBBC000000000000000000,382
QV 3670 DATA 0000000000000000000000000007
01010101010102000000000000000000000000
000000000000000000000000,397
KI 3680 DATA 0000000000000000060101010101
01020000000000000000000000000000000000
000000000000000000000000,411
RL 3690 DATA 0000006010101010101010200000
```

```
00000000000000000000000000000000000000
0000000000000000000000601,432
RI 3700 DATA 0101010101020000000000000000
00000000000000000000000000000000000000
00000000000008010101010101,453
LG 3710 DATA 0200000000000000000000000000
00000000000000000000000000000000000000
0601010101010102000000000,469
BU 3720 DATA 0000000000000000000000000000
000000000000000000000000000006010101E8
C92CF004C99BD0F48E021F68,286
TJ 3730 DATA 60CEF500AD082DF00160AE05D0F0
0AE001F006A9028D082D60AD0A2DD01BAD07D0
F016C904B009C901D00FAE00,67
RN 3740 DATA 50F009A0018C082D888C005060C9
02D00BA2008E0050A9018D0A2D60A2018E0050
60000000000000000000000000,951
VI 3750 DATA BLANK,951
VL 3760 DATA BLANK,951
VO 3770 DATA BLANK,951
DR 3780 DATA 0000000000000000000000000000
00000000000000000000000000000000000000
007070707070421E51700270,914
NQ 3790 DATA 70000007707002707002700270 02
7002410051010101010133342536250128292E
24010101012E2F34342D012D,665
RS 3800 DATA 2923322F01232C35220101010101
01010101010101010101010101010101303225
33252E343301010101010101,405
AG 3810 DATA 0101010101010101010137213425
320101332B2901013323282F2F2C010101012A
352D30010132212D30330101,468
MI 3820 DATA 262F32010128292728253201012C
2536252C330101010101010101303225333301
01223534342F2E0101212E24,769
BO 3830 DATA 0101232F2E34322F2C0101222F21
3401010101010101132252C252133250101223 5
34342F2E0101342F0101232F,27
XO 3840 DATA 2E34322F2C0101332B2925320101
0101011A01111910150011B01333425362501 01
28292E240101010101010101,42
EN 3850 DATA 0101010101010101010101013035
222C292301242F2D21292E0101010101010101
010101010101010101010101,578
WQ 3860 DATA 01010101203F20A9518D3102A900
8D3002A9288DF402A9808DC6028DC802A9008D
1FD0A200E8A000C8D0FDE020,108
XY 3870 DATA D0F6AD1FD0C906D0034C8552EEC4
024C64524C8852A9048D0553A910A2069D482C
CAD0FAA9008DB7538DB853A9,512
NF 3880 DATA 138D582C20A053206256A9388D08
2CA94E8D092CA9008D072D8D082D8D0B2DA900
8D3002A92C8D3102A9288DF4,266
YS 3890 DATA 02A9848DC402A9368DC502A9908D
C602A9108DC702A9C28DC802203F20205D2020
8520200020204F2E20805420,336
TV 3900 DATA 015020075320B9534CF95200U1AD
072DC900F018A200E8A000C8EAD0FCE000D0F5
AD072DC902F005C9FFF01960,552
CX 3910 DATA CE0553CE582CAD0553F008686820
62564CAA5268684CA156206256AD0B2DC90690
68EE0653AD06531869108D62,849
ZV 3920 DATA 2CAD0653C902F035C903F022C904
F00FA9058D022DA9038D042D68684CAA52A904
8D022DA9028D042D68684CAA,25
UN 3930 DATA 52A9038D022DA9028D042D68684C
AA52A9028D022DA9018D042D68684CAA52A901
8D022D8D042D8D0653A9118D,724
PG 3940 DATA 622C6068684CAA52000200AD0B2D
CDB653D00160904E20B555EEB65318F8ADB753
69018DB753ADB85369008DB8,621
QK 3950 DATA 53D8ADB753290F1869108D4C2CAD
B7534A4A4A4A290F1869108D4B2CADB853290F
1869108D4A2CADB8534A4A4A,579
FG 3960 DATA 4A290F1869108D492C60A9008DB6
536000010400B60320C55520DD55AD1854F041
EE1954AD1954CD1A549036F0,689
CJ 3970 DATA 37A9008D1954AD1D54D02AAE1B54
BDB0548D1C54BD32558D1D54E88E1B54AD1C54
8D00D2A9A68D01D2AE1B54E0,581
PU 3980 DATA 82D005A9008D1B544C62E4CE1D54
AD1D54D0F5A9008D00D28D01D24C62E4A2008E
1B54E88E1854A254A01EA907,588
UD 3990 DATA 4C5CE4A9008D00D28D01D28D02D2
8D03D28D04D28D05D28D1B548D18548D082D60
909990F3D9B69090909990A2,39
FM 4000 DATA B6A2A2ADA2B6C1B6B6C1B6D9F390
9990F3D9B69090909990A2B6A2A28890A2B6A2
9088888888888888909090A2,410
TB 4010 DATA B6A2A2A2B6A290A2908888888888
888890909090A2B6B6A2A2A290A2B6909990F3D9
B69090909990A2B6A2A2ADA2,571
AO 4020 DATA B6C1B6B6C1B6D9F3909990F3D9B6
909090909990A2B6A2A28890A2B6000101020402
0404040301020204040301 02,293
YZ 4030 DATA 0204040301020202010102040204
040403010202040204020404 0C020202020202
04020202020202080204020 4,423
OG 4040 DATA 040C02020202020204020202 0202
0206020204020404 0D01010204020404040301
0202040403010202040403 01,562
OL 4050 DATA 0202020101020402040404030102
020402040204040C3000A9018D06D2A98F8D07
D2A9058DB45560ADB455D001,198
TI 4060 DATA 60CEB455ADB455F00160A9008D06
D28D07D260AD082DD00160A9018D04D2A98A8D
05D2A9108D02D2A9838D03D2,431
LV 4070 DATA A9008D18548D00D28D01D2607070
70707070704 73A5670074103560101010101 27
25340101322521243901 0101,271
UF 4080 DATA 0101010101010101010101010101
0101010101010101010101010127212D250101
2F36253201010101010101 01,650
QR 4090 DATA 33232F3225011B01101010121010
010101203F20A9128D0B56A9568D3102A9038D
3002A9288DF402A9708DC602,580
OL 4100 DATA 8DC802A9D48DC402208956A200E8
A000C8EAEAEAEAEAEAEAEAEAC000D0F2E000D0
EB60203F20A93A8D0B56A206,923
BX 4110 DATA CABD492C9D5956E000D0F5206A56
4C4A520000000000000000000000000000000000
00000000000000000000000000,896
```

□



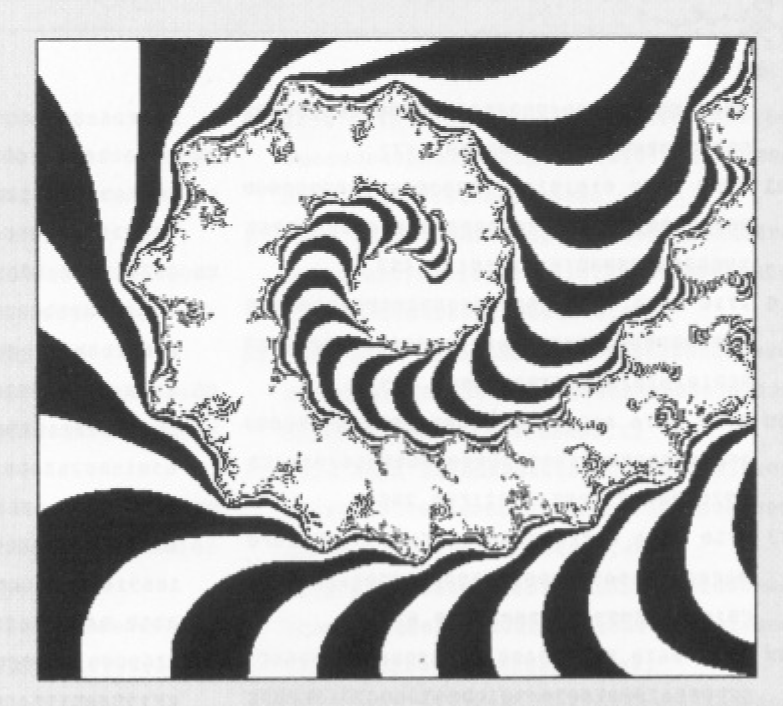
SEE OVERLEAF



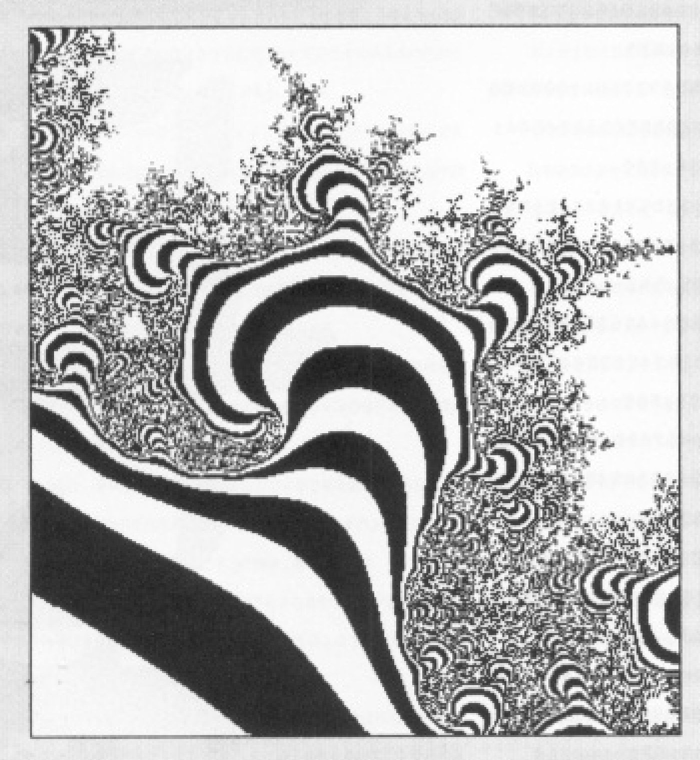
FRACTAL IMAGES

Peter Coates' article last issue generated a lot of interest and so we present a further series of images submitted by Peter shortly after the last issue was completed.

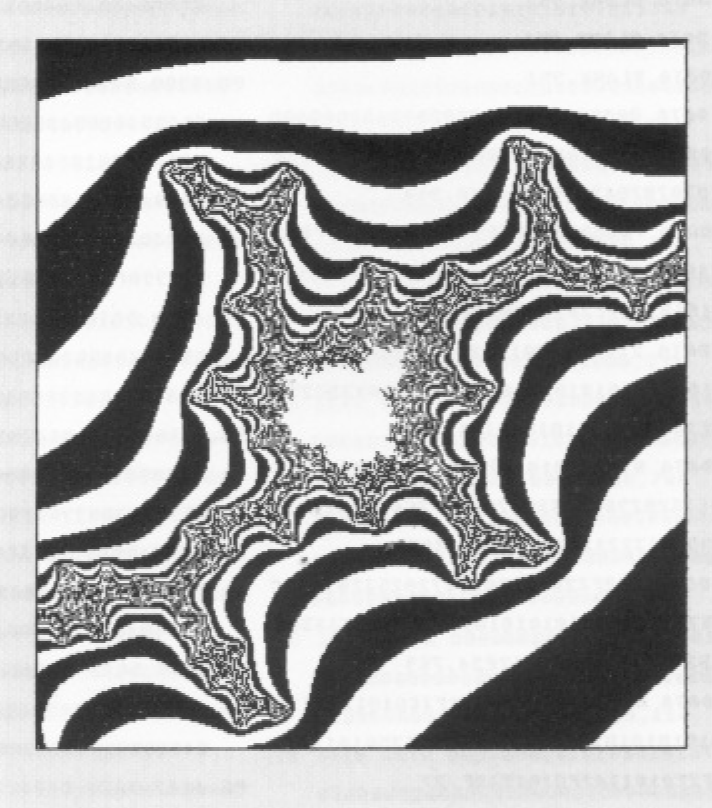
The images with the original article were mainly from the Julia Set but these, with the author's own imaginative titles, are from the Mandlebrot Set. These are considerably reduced from the originals which were produced on an ink-jet printer to give a much denser image than on a dot-matrix.



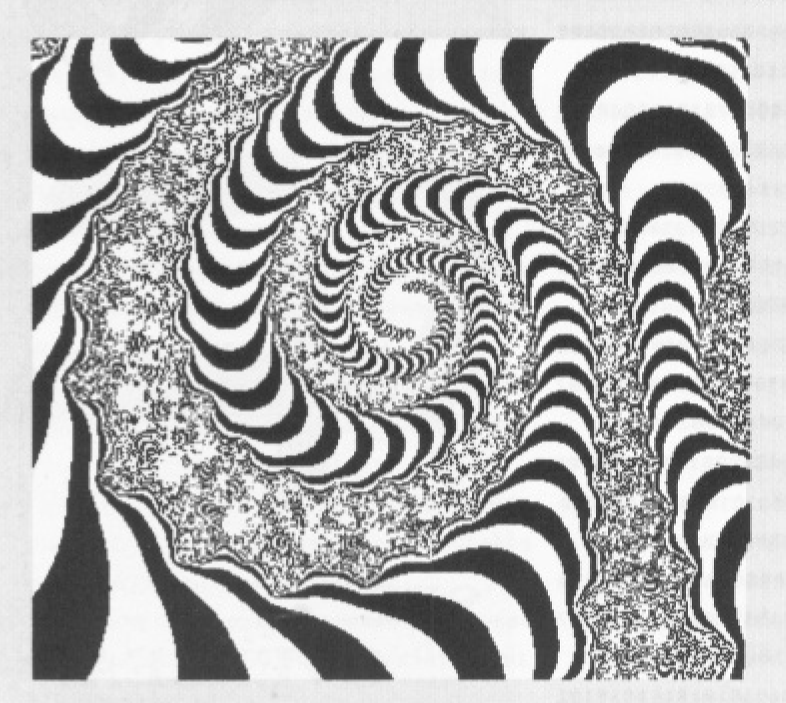
Cinnebar Spiral



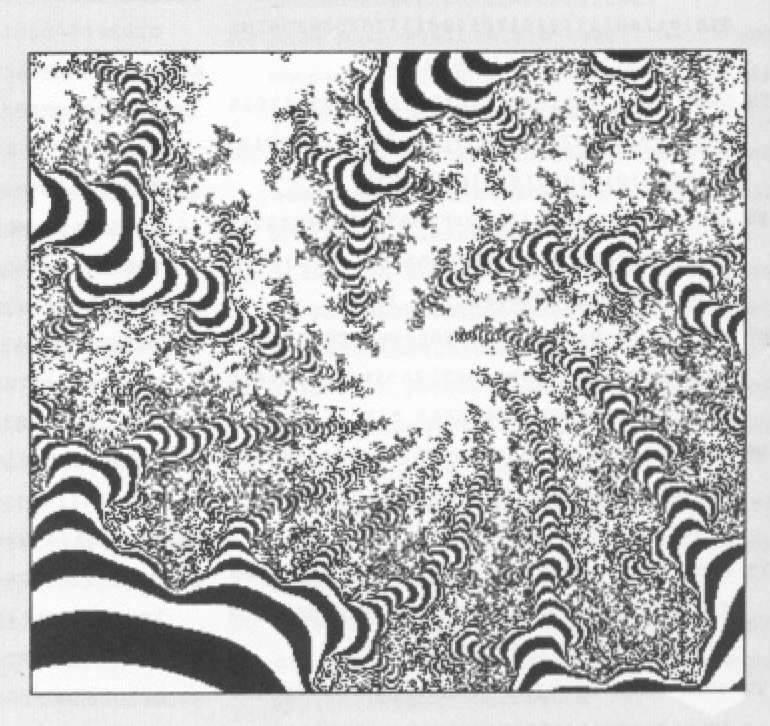
Your Nails Need Trimming



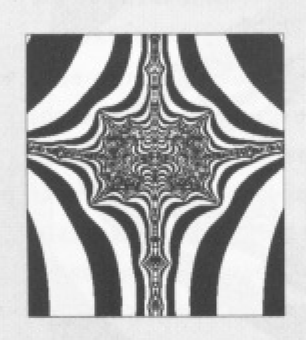
Baby Mandlebrot with Admirers

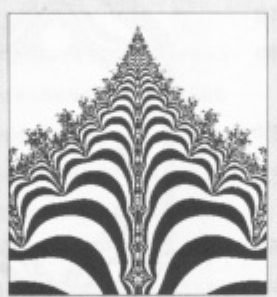


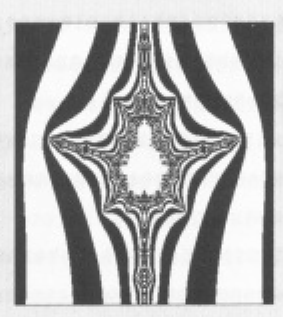
Double Descent



Katryn Wheel







BACK ISSUES

PAGE 6 back issues represent an excellent way of increasing the enjoyment of your Atari with articles to enlighten you, programs to type in and reviews of software to guide you. Almost all of the contents of past issues will be as fresh and relevant as when it appeared – increase your enjoyment now, before it's too late!

Issue 10 – ADVENTURE SPECIAL. An issue with Adventures as its main theme with a super, challenging type in Adventure HOUSE OF SECRETS, winner of our readers' poll for that year. Plus an interview with Scott Adams, a (nearly) complete list of Atari adventures, an Adventure cracker, Diamonds, Spinner, Screen Colour and the usual assortment of reviews.

Issue 13 – A great scrolling game FLIGHT OF THE SWAN that was one of the winners in our scrolling competition plus great games, Camelot, Bomb Escape and Bull Ants. Also Music Maker, 1020 Printer Handler, Player Missile Graphics in Machine Code, Music Reviews and our regular Adventure column.

Issue 19 – The first coverage of the ST but not to be outdone, plenty for the 8-bits. A great machine-language space game SECTOR 10, a super utility, Magfile, to keep track of your books and magazines plus The Chase. The second part of our series on Display Lists, build your own Speech Synthesiser, a review of 1985, in-depth Adventure reviews and plenty more.

Issue 20 – GRAPHICS SPECIAL. A super special issue with a graphics theme. Draw some masterpieces with GRAPHICS WORKSHOP and explore your graphics potential with Colour Palette, Picloada, Colour Attributes and CIO Slideshow. An in-depth review of Printshop and Graphics Art Department, the final part of Display Lists and the Adventure column. 11 pages devoted to the ST plus a colour feature ATARI ART and ST GALLERY. And there's more! BLOCKBREAKER is one of the best games to have been published in any magazine. Don't miss it!

Issue 21 – A packed issue with games, TRAIN CRAZY, Revenger and Forklift. Utilities Scalemaster, Quick Disassembler and Measuring Temperature. Programming hints with Doing The Impossible, Error 8 Solved and THE GUIDE TO ERROR CODES. Reviews of Flight Simulator II, Hitchhiker's Guide to the Galaxy, and the latest Adventures. For the ST a DEGAS to NEO converter, Lattice C reviewed and reviews of a whole host of software.

Issue 22 – More serious users will enjoy SMARTSHEET, a Visicalc like type-in spreadsheet, and our review of Paperclip whilst gamesters will puzzle over Tricky Cubes and try to survive Hidden Depths. The Guide to Error Codes is concluded and there are articles on Fractals, Tape Problems and some less well known Adventures. Loads of reviews and some great new routines for Blockbreaker. ST users will find out how to program Sprites and can read reviews on Time Bandit, Pro-Fortran 77, VIP Professional and more.

All back issues are £1.20 each in the U.K., £1.75 for Europe or surface mail elsewhere and £2.67 for Air Mail outside Europe.

Please make cheques/postal orders payable to PAGE 6. Send your order to PAGE 6, P.O. BOX 54, STAFFORD, ST16 1DR, ENGLAND.

ACCESS and VISA accepted. Telephone 0785 213928.

LOTS MORE!

Subscribers to PAGE 6 gets lots more special offers. Books, an incredible collection of Public Domain software for 8-bit and ST machines, exclusive software, binders and more. To find out what you are missing ask for a copy of our **PAGE 6 ACCESSORY SHOP LEAFLET.**

GET THEM ON DISK

All of the most recent issues of PAGE 6 are available on disk – including those out of print issues!

A PAGE 6 Issue disk contains all of the programs (except ST) from a particular issue, ready to run from a custom Menu. No more frustrating hours typing all those long programs. See just how good they are without the effort.

Issue 14 – Contains COUNTERACTION, SUPPLY BLASTER, CROSSWORD CREATOR. DEPTH CHARGE, ACCESS III, RAINBOW START, BASIC ANIMATION and TYPO II.

Issue 15 – Contains THE WANDERER, KANGA, TICK TOCK, AUTOCAR, THE BOOSTER and PLAYER MISSILE GRAPHICS

Issue 16 – Contains BLACK BOX, FREEWAY ACE!, DRAUGHTS, TURN THE TABLES, AUTOCAR GRAPH and CHARACTER PLOTTING programs.

Issue 17 – Contains RENUM, SHOOTING GALLERY, X-Y-ZAP, INLAY CARDS, CASTLE MORGUE, MATTHEWS LABEL MAKER and several programs on ANTIC modes 4/5.

Issue 18 – Contains BERTIE, GRAND PRIX II, BLITZ, LISTER, STARS, TYPO 3 and several programs on Display Lists.

Issue 19 – Contains SNOWFALL, THE CHASE, MAGFILE, SECTOR 10, STARKIES UTILITIES plus programs for the Speech Synthesiser and several programs on Display Lists.

Issue 20 – Contains BLOCKBREAKER, GRAPHICS WORKSHOP, COLOUR PALETTE, PICLOADA, COLOUR ATTRIBUTES, CIO SLIDE SHOW plus more Display List programs and pictures for Graphics Workshop.

Issue 21 – Contains REVENGER, TRAIN CRAZY, FORKLIFT, SCALEMASTER, DOING THE IMPOSSIBLE, QUICK DISASSEMBLER and MEASURING TEMPERATURE.

Issue 22 – Contains SMARTSHEET, TRICKY CUBES (two versions), HIDDEN DEPTHS and new versions of BLOCKBREAKER. Double sided disk.

Issue 23 – Contains – all the program listings from this issue.

PAGE 6 Issue disks will run on any 8-bit Atari with 48k or 64k memory. Each disk is just £3.95. Compare that for value!

Order your disks from PAGE 6 by post from PAGE 6, P.O.BOX 54, STAFFORD. ST16 1DR or by telephone using ACCESS or VISA on 0785 213928.

Postage is FREE in U.K. Overseas please add £1 per order (for any number of disks).

DUST COVERS

You've spent a lot of money on your equipment, why spend more on repairs from breakdowns caused by dust, dirt and spilt liquids? Dust covers from PAGE 6 are custom made for each piece of equipment and come in smart natural PVC with a brown or black trimming as appropriate.

400 800 600XL 800XL 130XE	£3.95	1040ST	£4.95
410 Old Style Cassette*	£2.95	520ST	£4.95
410 New Style Cassette	£2.95	3½" SF354 SF314 Disk Drive	£2.95
1010 Cassette	£2.95	2 stacked ST disk drives	£3.95
XC11 Cassette	£2.95	SM124 Monochrome Monitor	£4.95
810 1050 Disk Drive	£3.95		
1020 1027 1029 printers	£3.95	Other printers monitors (to order)	£4.95

***old style does not have a pause button.**

Some popular printer covers are held in stock but most can be obtained to order. Please state exact model when ordering.

E R I T Y O P A S D L K F G H K

D WORDSEARCH F D E W F

V C X D F R Y J R W E D S C V Y

Requires printer.

P S N C K S W O D

Print your own puzzles with Jim Flewker's wordsearch program

W E U I J N M K

L O D E S W X C

If you enjoy puzzles, here's a chance to create your own hidden word puzzles for your family and friends, or even your own, puzzlement. The program does require a printer but will work on any 80 column printer.

The program allows you to enter up to 20 words, each of which may be up to fifteen letters, which it then places in a matrix which is 21 characters square. Words may intersect but will not necessarily do so.

As it places the words, the program prints them in normal fashion to the printer and in their placements within the word square on the screen. Once all the words are placed, a hard copy of the solution will first be printed before the rest of the matrix is filled with random letters to produce the familiar word square. You then have the choice of printing the final puzzle or, if you are not happy with the arrangement, re-running the puzzle to place the same words differently. You may repeat this process as often as desired.

ADDITIONAL FACILITIES

As well as printing the standard puzzle, the user has other options.

Clues may be provided to guide the searcher in place of the usual list of words. For example, French words could be used in the puzzle and the searcher could be provided with clues in the forms of their English meanings. Each clue can be up to three lines of text but if you wish to use longer clues you may change the dimensioned length of CLUE$.

The difficulty of the puzzle can be controlled at the beginning of the program by selecting whether words can be placed diagonally or backwards. The default allows words to be placed in any direction although always in a straight line.

In addition to these options, there is no reason why you cannot modify the program further by changing certain key variables. More words could be entered or the program could try more ways to place words. The notes on variables and how the program works should assist.

HOW IT WORKS

Initialisation is from line 10000 with the main routine between lines 1000 and 3100 with various subroutines preceding the main routine.

Lines 20-30 – Set colour, remove cursor and send to the main set-up routine at....
Lines 10000-10210 – where variables are dimensioned and initialised and user options are provided. We then return to....
Lines 1000-1090 – where you input the words for the puzzle which are put together in a large string. Asterisks are used to demarcate words and the words are crudely sorted on input so that the longest are first.
Lines 1100-1150 – give you the chance to input clues and then ....
Lines 1160-1190 – draw a frame for the matrix using PLOT and DRAWTO in text mode 0. Then comes a sort of central loop....
Lines 1200-1250 – which split off a word and send it to the subroutine which places it satisfactorily in the matrix. The subroutine in question is at....
Lines 400-490 – and is itself almost a hornets' nest of subroutines. Briefly, after a direction and starting point have been decided, the matrix is checked to see if the word will fit. If not, the starting point is changed and the process rapidly repeated, up to 100 times if necessary. When enough spaces are found, the letters of the word (or, more precisely, their ASCII codes) are put in the matrix. and the word is added to the screen. The Atari then goes back for another word. When all words are done, the matrix is printed to the printer and we move to....
Lines 2000-2050 – which fill in all the blanks in the matrix with alphabetic garbage. After which....
Lines 2080-2110 – offer the choice of printing the puzzle or trying again.
Lines 2200-2240 – refill the matrix with blank spaces and go back to line 1170 to begin splitting out the words again.

N M Y R W Y G J

```
EI 1 REM ********************************
JF 2 REM *          WORDSEARCH          *
NQ 3 REM *        by Jim Flewker        *
EB 4 REM * ---------------------------- *
IY 5 REM *  PAGE 6 MAGAZINE - ENGLAND   *
EN 6 REM ********************************
NM 7 REM
BK 20 GRAPHICS 0:POKE 752,1
TX 30 SETCOLOR 2,12,2:GOTO 10000
XP 49 REM  'MOVE' - ALTERS X AND Y
SG 50 X=X+(R=1)-(L=1)
GY 60 Y=Y+(DOWN=1)-(UP=1)
ZY 80 RETURN
TH 99 REM  'HEAD' - PRINTS TOP LINE
LL 100 ? CHR$(HCR):POSITION 1,0:PRINT HEAD$;
QF 110 HCR=125:RETURN
ES 198 REM  'SCREEN'- UPDATES MATRIX
QB 199 REM       ON   THE   SCREEN
ZL 200 X=SX:Y=SY
IK 210 FOR N=1 TO LW
YE 220 CM=MATRIX(X,Y)
WR 230 POSITION X+9,Y:? CHR$(CM);
VD 240 GOSUB MOVE
IA 250 NEXT N
ZK 260 RETURN
IB 298 REM  'RANDXY' - STARTING POINTS
FC 299 REM     CHOSEN   AND   CHECKED
AA 300 X=INT(RND(0)*21)+1
AH 310 Y=INT(RND(0)*21)+1
YJ 320 SX=X:SY=Y
AK 330 IF UP=1 THEN IF Y-LW<0 THEN 310
HH 340 IF R=1 THEN IF X+LW>22 THEN 300
AI 350 IF DOWN=1 THEN IF Y+LW>22 THEN 310
LR 360 IF L=1 THEN IF X-LW<0 THEN 300
ZN 370 RETURN
YU 397 REM  'WORDPLACE' - AFTER  THE
CT 398 REM  DIRECTION AND START HAVE
OO 399 REM  BEEN SET, PLACES  WORD$
AR 400 LW=LEN(WORD$):GOSUB DIRECT
QK 410 TRY=0:LPRINT WORD$
NV 415 IF TRY>LIMIT THEN HEAD$="      CANNOT PLACE :":HEAD$(20)=WORD$:HCR=253:GOSUB HEAD:FOR D=1 TO 300:NEXT D:RETURN
IO 420 FOR N=1 TO LW
WY 430 IF MATRIX(X,Y)<>N32 AND MATRIX(X,Y)<>ASC(WORD$(N)) THEN N=LW:TRY=TRY+1:GOSUB RANDXY:GOTO 415
TS 440 GOSUB MOVE:NEXT N
PB 450 X=SX:Y=SY:N=0
IW 460 FOR N=1 TO LW
ZT 470 MATRIX(X,Y)=ASC(WORD$(N))
UA 480 GOSUB MOVE:NEXT N
BE 490 GOSUB SCREEN:RETURN
SM 498 REM  'DIRECT' ROTATES DIRECTION
AC 499 REM    AND SETS UP VARIABLES
MX 500 DIR=DIR+INC:IF DIR>MAX THEN DIR=DIR-MAX
SI 510 UP=0:DOWN=0:R=0:L=0
BH 520 ON DIR GOSUB 610,620,630,640,650,660,670,680
NV 530 GOSUB RANDXY
ZJ 540 RETURN
VW 610 UP=1:RETURN
WT 620 UP=1:R=1:RETURN
EB 630 R=1:RETURN
FX 640 DOWN=1:R=1:RETURN
LY 650 DOWN=1:RETURN
DH 660 DOWN=1:L=1:RETURN
DF 670 L=1:RETURN
UX 680 UP=1:L=1:RETURN
XM 998 REM  THE INPUT ROUTINE, ALSO
VJ 999 REM  PUTS  LONGEST WORD FIRST
WJ 1000 HEAD$="           INPUT UP TO 20 WORDS          ":GOSUB HEAD
PY 1005 POSITION 1,21:? "┌────────────────────────────────────┐"
OQ 1010 POSITION 1,22:? "|  Type words of up to 15 letters.   |"
NK 1015 POSITION 1,23:? "|  To finish, just press RETURN.   |";
TE 1020 POSITION 1,1:? ">TITLE";:INPUT TITLE$:POSITION 1,1:? " TITLE: ";TITLE$
AV 1025 POSITION 1,2:? "────────────────────────────────────":POSITION 38,1:? " |"
TY 1030 POSITION 2+(LEFT<10),3:? " Max. number of words left = ";LEFT
IH 1040 POSITION CP,RP+(MOST-LEFT):INPUT WORD$:IF WORD$="" THEN 1090
RX 1045 LEFT=LEFT-1:IF LEFT<MOST-14 THEN CP=18:RP=-10
NC 1050 IF LEN(WORD$)<LEN(LONGEST$) THEN TEMP$=WORD$:TEMP$(LEN(TEMP$)+1)="*":GOTO 1070
LC 1060 LONGEST$=WORD$:TEMP$=BIG$:BIG$=WORD$:BIG$(LEN(BIG$)+1)="*"
MY 1070 BIG$(LEN(BIG$)+1)=TEMP$
PL 1080 IF LEFT>0 THEN 1030
```

THE SUBROUTINES

Line 50 onwards – a brief way of finding which way to move in the matrix. Uses variables R, L, UP, DOWN which have been set in the Direction routine (lines 500-680).
Line 100 onwards – prints an instruction or status line at the top of the screen, but also either clears the screen or sounds the bell depending on what value the variable HCR is set to.
Line 200 onwards – takes numeric values from MATRIX, which are ASCII codes and turns them into letters on the screen.
Line 300 onwards – chooses starting points quite randomly but checks them with direction and word length (variable LW). Called and then re-called until the word is fitted in.
Line 400 onwards – see above.
Line 500 onwards – DIRection is changed by adding INC. If INC is set to 1 then direction changes by 45 degrees. From this, subroutines set the self-explanatory variables UP, DOWN, R and L.

MAIN VARIABLES

MATRIX – a 2-dimensional array whose dimensions correspond to the size of the wordsquare and which holds the ASCII codes of the letters. The dimensions can easily be altered – e.g. width could be increased or reduced. At present the matrix is too wide to be printed on a 1020 printer but you could experiment with a smaller matrix.
BIG$ – because the Atari has no arrays of strings, this long string holds all the words to be used.
TEMP$ – used as a holding string when manipulating strings, also to input clues.
CLUE$ – holds all clues, separated by CR character (ASCII 155). Increase the DIMensioned length if you want long clues.
WORD$ – used for single words.
HEAD$ – the instruction or status line. Usually 38 characters long.
X – horizontal position in MATRIX and also (with the addition of 9) on screen.
Y – the equivalent for the vertical position.
SX and SY – starting positions.
DIR – controls direction of word placement. There are 8 directions in all.
MAX – the value to which DIR can go before it is reset to 1.
INC – the amount by which DIR is increased after each word.
LIMIT – the number of times the Atari will try and place a word before giving up. Important since, in the main, placement is quite randomly decided. LIMIT can easily be increased if need be.
TRY – counts the attempts to place a word.
LEFT (and CLUELEFT) – limits and counts down the words/clues input. Left can easily be increased, up to 30. You would need to make adjustments to BIG$, TEMP$ and perhaps CLUE$. You may also need to adjust LIMIT and HEAD$ if you plan to use many long words.

GOTO DIRECTORY

The GOTO DIRECTORY is a guide to retailers who provide product support for ATARI computers. Many of these retailers will supply Mail Order so if you have problems finding a supplier, turn to the GOTO DIRECTORY.

Retailers who are interested in an entry in this feature should contact the Editor on 0785 213928

A.S.WOOTTON & SONS,
116, Edleston Road,
Crewe,
CW2 7HD
Tel. 0270 214118

Nothing but ATARI. Authorised Service Centre with fast turnaround of all repairs. All Atari stock plus printers, joystick inserts and extension leads at good prices. Try us for repairs or purchases.

COMPUTER CENTRE,
174, High Street,
Hornchurch,
Essex
Tel. 04024 75613 or 44255

We have a large range of software, hardware, printers, interfaces, magazines and books. Full support given to interfacing, word processing etc. Computer repairs. We specialise in all home computers. Mail Order or personal callers welcome.

BITS AND PIECES,
10, North Street,
Strood,
Rochester,
Kent
Tel. 0634 716422

A NEW Atari only shop in the Medway area. XL/XE/ST always in stock. We are happy to demonstrate the latest software and offer the most friendly service. Remember we are ATARI only. We stock the best.



LADBROKE COMPUTING,
33, Ormskirk Road,
Preston,
Lancs. PR1 2QP
Tel. 0772 21474 or 0772 27236

We offer full service and support for any Atari and have all peripherals and available software in stock. Come to the shop for personal service or try us for Mail Order. Either way you'll be pleased you did.

INTOTO,
1, Heathcoat Street,
Hockley,
Nottingham,
NG1 3AF
Tel. 0602 410987

A comprehensive range of hardware, software, peripherals, joysticks, books and magazines etc. Please call or ring for helpful, friendly support.

PEATS ELECTRONICS,
25, Parnell Street,
Dublin 1,
Ireland
Tel. (00)01 749972/3/4

We stock a full range of Hardware, Software, Interfaces, Printers and accessories. The fullest support for Atari in Ireland. Mail order throughout the U.K.

FEE'S
194, High street,
Scunthorpe,
S.Humberside
Tel. 0724 857652

Your Atari specialist in Humberside for hardware, software and publications. Open 9.30 a.m. - 5.30 p.m SIX days a week. For personal attention ask for Nick or Frances.

MICROBYTE,
71, Seaview Road,
Liscard,
Wallasey,
Merseyside, L45 4QW
Tel. 051 630 6933

Tired of high prices , poor service and hidden charges from other Mail Order retailers? Try us for the latest titles and U.S. mags. Visit or call anytime up to 6 p.m.

JENNINGS STORES,
248, Hertford Road,
(Nr. Green Street),
Enfield,
Middx
Tel. 01 804 1767

Very large range of English and American software available as well as the very latest in hardware.

SOFTWARE EXPRESS,
514-516, Alum Rock Road,
Alum Rock,
Birmingham 8
Tel. 021 328 3585

We are a company dedicated to supplying ALL your Atari needs which also includes a PERSONAL IMPORT SERVICE and an out of warranty repair service. Phone 021 328 3585

MICRO-TRONICS
27a, Market Street,
Tamworth,
Staffs,
B79 7LR
Tel. 0827 51480

Hardware, Software, peripherals, books, magazines, accessories etc. etc. We specialise in ATARI, Amstrad, Commodore, Tatung computers. Pay us a visit OR use our Mail Order service. ACCESS & VISA accepted.

TRIONIC,
144, Station Road,
Harrow,
Middx. HA1 2RH
Tel. 01 861 0036

Software, peripherals, books and magazines. A comprehensive range for Atari. Amstrad, Comm- odore and Spectrum. Try our late night shopping. Open 10 a.m. to 8 p.m. Monday to Saturday. Give us a call or pay us a visit.

RADFORD HI-FI LTD.,
52, Gloucester Road,
Bristol,
Avon
Tel. 0272 428247

We stock and support a comprehensive range of products for Atari. Huge range of software from educational to small business (plus games of course). Word processing packages. Printers. All for the best computers. ST's available from stock.

YORK COMPUTER CENTRE,
7, Stonegate Arcade,
York,
Tel. 0904 641862

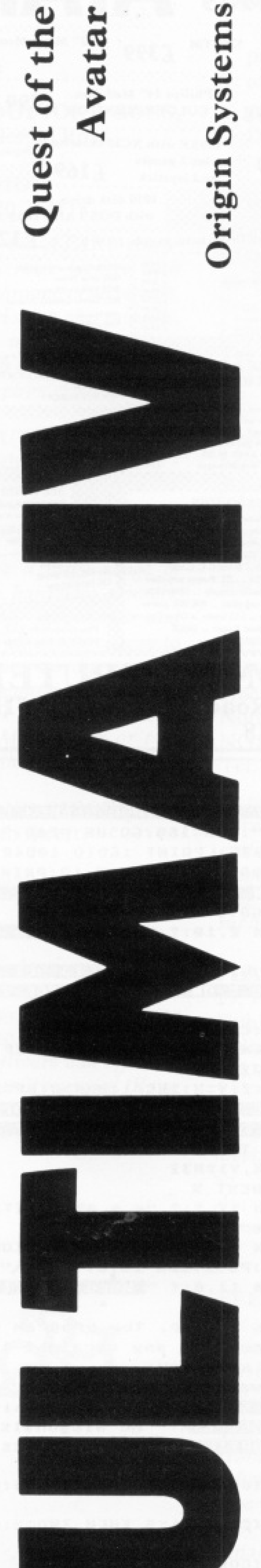
Top American and English software - over 1000 titles! Hardware, books, magazines, accessories. If you need anything for your Atari, try Yorkshire's widest and most comprehensive range of products for your machine.

MIDLANDS ATARI CENTER
212, Broad Street,
Birmingham,
B15 1AY
Tel: 021 643 9100

Specialist Atari dealers with the biggest display of Atari software and hardware outside London. Whatever your needs - ST, 8-bit or VCS - a visit to our large showroom will not be wasted. We would love to see you!

```
BO 1090 BIG$(LEN(BIG$)+1)="!"
YE 1100 HEAD$="          CLUE INPUT OPTIO
   N          ":GOSUB HEAD
VJ 1110 ? :? "Type C to provide CLUES wit
   h the        puzzle, any other key to co
   ntinue."
MN 1115 OPEN #1,4,0,"K:":GET #1,K:CLOSE #
   1:IF K<>67 AND K<>99 THEN 1160
OZ 1120 CLULEFT=MOST-LEFT:MOST=CLULEFT
NG 1125 GOSUB HEAD
LP 1130 POSITION 2,3:? "Type clue number
   ";1+MOST-CLULEFT:? :INPUT TEMP$:IF TEM
   P$="" THEN 1160
MH 1140 CLULEFT=CLULEFT-1
SX 1150 CLUE$(LEN(CLUE$)+1)=TEMP$:CLUE$(L
   EN(CLUE$)+1)=CHR$(155):IF CLULEFT>0 TH
   EN 1125
ZU 1160 HEAD$="        CREATING   WORDSEA
   RCH...     ":GOSUB HEAD
UE 1170 COLOR 124:PLOT 8,1:DRAWTO 8,21:CO
   LOR 26:PLOT 8,22
XI 1180 COLOR 124:PLOT 32,1:DRAWTO 32,21
GD 1190 COLOR 18:PLOT 9,22:DRAWTO 32,22:C
   OLOR 3:PLOT 32,22
GL 1198 REM   SPLITS BIG$ AND SENDS A
NR 1199 REM   WORD TO PLACING ROUTINE
YC 1200 C=1:START=1:FINISH=-1
KV 1210 C=C+1:IF BIG$(C,C)="*" THEN START
   =FINISH+2:FINISH=C-1:WORD$=BIG$(START,
   FINISH):GOSUB WORDPLACE
JM 1220 IF BIG$(C,C)<>"!" THEN 1210
LL 1230 HEAD$="     WORDS PLACED - PRINTING
    SOLUTION     ":HCR=253:GOSUB HEAD
HI 1250 SOL=1:GOSUB 3000
JY 1999 REM   FILLS SPACES RANDOMLY
DW 2000 HEAD$="    FILLING SPACES WITH RAND
   OM LETTERS    ":HCR=253:GOSUB HEAD
TP 2010 FOR Y=1 TO 21:FOR X=1 TO 21
OZ 2020 IF MATRIX(X,Y)<>N32 THEN 2050
JK 2030 RANDCHAR=INT(RND(0)*26)+65:MATRIX
   (X,Y)=RANDCHAR
MD 2040 POSITION X+9,Y:? CHR$(RANDCHAR);
NM 2050 NEXT X:NEXT Y
CN 2079 REM    OPTION TO PRINT OR RE-DO
PR 2080 HEAD$="   P=PRINT,  R=RE-DO, ANY=N
   EW PUZZLE     ":HCR=253:GOSUB HEAD
FP 2090 OPEN #1,4,0,"K:"
NF 2100 GET #1,K:CLOSE #1
WU 2110 IF K=80 OR K=112 THEN GOSUB 3000:
   GOTO 2080
NR 2115 IF K<>82 AND K<>114 THEN RUN
DW 2200 HEAD$="        RE-CREATING WITH SAME
    WORDS....    ":GOSUB HEAD
UH 2210 FOR X=1 TO 21:FOR Y=1 TO 21
SG 2220 MATRIX(X,Y)=N32
ND 2230 NEXT Y:NEXT X
KY 2240 LPRINT CHR$(FF):GOTO 1170
BY 2999 REM        THE PRINTER ROUTINE
RS 3000 CLOSE #2:OPEN #2,8,0,"P:"
MO 3010 IF  NOT SOL THEN ? #2;CHR$(FF)
DA 3015 ? #2:? #2
DR 3020 IF SOL=1 THEN ? #2;"
        SOLUTION":SOL=0
LW 3030 ? #2;"WORDSEARCH: ";TITLE$:? #2
KS 3040 FOR Y=1 TO 21
KL 3050 FOR X=1 TO 21
ZP 3060 CM=MATRIX(X,Y):? #2;CHR$(CM);" ";
   :NEXT X
FJ 3070 ? #2;CHR$(155);
MJ 3080 NEXT Y
UH 3090 IF CLUE$>"" THEN ? #2:? #2;"Here
   are the CLUES:-":? #2;CLUE$
FH 3100 LPRINT CHR$(FF):RETURN
MG 9999 REM          INITIALISATION
KK 10000 DIM MATRIX(21,21)
IK 10010 DIM WORD$(15),TEMP$(305),BIG$(32
   1),HEAD$(38),LONGEST$(16),TITLE$(30)
WY 10015 DIM CLUE$(500)
AZ 10020 MOVE=50:HEAD=100:SCREEN=200:DIRE
   CT=500
GM 10025 WORDPLACE=400:RANDXY=300:CONSOL=
   53279
CK 10030 HEAD$="           WORDSEARCH CREA
   TOR          ":HCR=160:GOSUB HEAD:?
FJ 10032 TRAP 10035:LPRINT :GOTO 10040
JT 10035 TRAP 40000:POSITION 2,10:PRINT "
   K Press RETURN when PRINTER is on...";
   :INPUT TEMP$:GOTO 10032
CC 10040 POSITION 2,10:? "         One mom
   ent please...      "
LK 10045 LPRINT "␛l┐":REM CODE TO SET
   LEFT MARGIN TO 5 ON EPSON. CHANGE IF
   NECESSARY.
CN 10050 BIG$="":CLUE$=""
LL 10055 DIR=1:LIMIT=100:N=1:TRY=0:LEFT=2
   0:MOST=LEFT:N32=32
PV 10060 FF=12:X=2:Y=X:INC=1:MAX=8:CP=2:R
   P=5:REM CHANGE VALUE OF FF TO REPRESEN
   T TOP OF FORM COMMAND IF DIFFERENT
QI 10070 FOR X=1 TO 21:FOR Y=1 TO 21
QK 10080 MATRIX(X,Y)=N32
IM 10090 NEXT Y:NEXT X
HG 10100 POSITION 17,2:? "• • •":POSITION
    17,6:? "• • •"
GU 10110 POSITION 18,3:? "\|/":POSITION 1
   7,4:? "•-?-•":POSITION 18,5:? "/|\"
CZ 10120 POSITION 11,8:? " Word Direction
    5 "
PA 10130 ? :? "As set up, the program wil
   l place the words in any straight line
   , including diagonals";
ZF 10140 ? ", upwards and backwards."
BO 10150 ? :? " START  - confirms this."
SC 10160 ? :? " SELECT - no diagonals."
NS 10170 ? :? " OPTION - no backwards mo
   vement."
FD 10180 IF PEEK(CONSOL)=3 THEN MAX=5:GOT
   O 1000
OE 10190 IF PEEK(CONSOL)=5 THEN INC=2:GOT
   O 1000
QI 10200 IF PEEK(CONSOL)=6 THEN 1000
AU 10210 GOTO 10180
```

□



The ultimate review or a story in its own right? Why has John Sweeney been moved to write at such length over just another program?

While out for a gentle stroll, you fall asleep beneath a tree. You are awakened by a strange noise – a magic portal opening and closing, and a small bundle falling through it. On examination the bundle turns out to be two books – The History of Britannia and The Book of Mystic Wisdom (although you only discover the latter by translating the runes on the cover!) – wrapped in a cloth. The bundle also contains a small Ankh and the cloth turns out to be a beautifully coloured map of The Lands of Britannia (about 43 cms square). All of these items plus a quick reference card, are actually in your games pack, each of the books being very well presented, and giving you approximately 100 pages of interesting reading.

Following the sound of distant music you eventually arrive at a gypsy's caravan. She appears to have known of your coming, and asks you a number of questions such as '*Thou art sworn to protect thy Lord at any cost, yet thou knowest he has committed a crime. Authorities ask thee of the affair, dost thou A) break thine oath by Honestly speaking; or B) uphold Honor by silently keeping thine oath?*' Each of the questions places you in a moral dilemma and forces you to choose between two virtues. After seven questions the gypsy says, '*So be it. Thy path is chosen*', and you are transported to a strange land while a voice whispers in your ear, '*seek the counsel of thy sovereign*'. The game now starts.

The screen changes to four windows. The whole of the left of the screen is occupied by a large square showing a bird's eye view of you in the centre, surrounded by a variety of terrain. The map actually covers an area of 256 by 256 squares, of which you can see 11 by 11 – plenty of scope for exploration! The right of the screen has a window at the top showing the status of your party, a window at the bottom describing what is going on and allowing you to enter commands, and a single line window between these showing how much food and gold you have.

Examining your statistics (both those which are always visible, and those you can scroll through by requesting Ztatistics – by pressing Z), you ascertain that you are a fighter with Chain Mail Armour and an Axe, 200 Food, 200 Gold, limited Strength, Intelligence and Dexterity. and 300 Hit Points. You also appear to have a small supply of Ginseng and Garlic! You use the four arrow keys to explore your surroundings. As you do so the terrain scrolls smoothly around you so that you remain in the centre of the screen. You appear to be on a small island with mountains to the north and something interesting on another island to the south. Unfortunately you don't appear to have any means of crossing the intervening water at the moment. There is however something of interest on your own island – a small town. You move your character onto this and press E for Enter. The scene changes. You are now in the middle of an 11 by 11 view of a small town (which actually measures 32 by 32). The town is called Jhelom. Walking up to a nearby guard, you Talk to him (T). The bottom right window records your conversation: YOU MEET A STERN GUARD – NAME(you say) '*I am a guard*' JOB '*I guard the gates and these passages*' GATES '*The gates of Jhelom*' PASSAGES '*These passages are restricted*'.

Well that sounds interesting – there do indeed appear to be some passages behind the guard and his colleagues. Unfortunately, unlike various other characters you can see moving around the town, the guards appear to be fixed in place. Remembering your experiences in Ultima III you decide it would probably be unwise to attack the guards – they tend to be a pretty tough lot! Besides aren't you supposed to be one of the good guys – an Avatar or something?

Maybe you will find some other way into the passages later. You wander on into town and explore a small patch of darkness between two buildings, it turns out to be a small wood, but there is nobody there. As you move around, the screen adjusts so that you can only see what is in line of sight – walls, buildings and woods obscure your view. You have a chat with a fighter: YOU MEET A THIN FIGHTER – NAME *'My name is Tinrod'* JOB *'I fight with valor'* VALOR *'There is no holier spot of ground than where defeated valor lies – art thou brave?'* Ahhh... should you answer Yes or No? Does it matter? You experiment a bit. NO *'Coward'!* You ask him about Valor again and say YES *'Fortune helps the brave'* BRAVE *'Be brave for there is much to dare'* HEALTH *'Couldn't be better'*.

You appear to be on a small island ...

You leave him and wander around the town. There is an Inn, but the innkeeper isn't very talkative – only seems interested in selling you a bed for the night. Exploring the Inn you find three bedrooms, but two of them are locked and occupied. You chat with Max the Housekeeper, but he doesn't seem to know much. You buy some ale at the Pub and when you tip the barkeeper he asks *'What'd ya like to know friend?'*, but you don't really know yet! There is also an Armourer, a Weapons Shop, and a House of Healing. By talking to the various people wandering around the town you learn of various artifacts which might be useful to obtain, and you gain a number of potentially useful items of information! You eventually decide to leave for the moment.

Once outside the town you wonder what to do next. As you are studying your History of Brittannia, a small Gate opens beside you on the island! You quickly enter it. The screen flashes to indicate magical activity and you find yourself on another island! Exploring the town here (Skara Brae) you learn of more artifacts, and gain more little snippets of information. Leaving the town you see the Gate opening again and quickly enter. This time you find yourself transported to a small clearing in the middle of a vast forest. Visibility is limited to a 3 by 3 square in the middle of the screen!

You set off south and east. Sometimes your attempts to move result in SLOW PROGRESS. You pass through some brushland, more forests, and finally reach a plain. Crossing this you enter some hilly ground, more SLOW PROGRESS. You finally reach impassable(?) mountains and start the long trek around them. Suddenly a small figure appears at the edge of the screen – looks a bit like a teddy bear? Every time you move it moves. It seems to be coming your way. Oh dear, now a small figure waving a sword has appeared – he is coming your way too!

... you find yourself transported to a small clearing ...

As the teddy bear reaches you the screen changes to show your current position in close up. Your party, just you at the moment, appears at the bottom of the screen. The enemy, two of them, appear at the top. You move towards them. Once you are beside them you press A for attack and use an arrow key to indicate the direction of attack. The bottom right window describes the action: MISSED. They attack. Your character's status line flashes and his Hit Points go down to 286, then to 273. Attack again: ORC BARELY WOUNDED (Oh that's what they are!). They attack again. You attack again. Eventually one, critically wounded, flees and the other finally succumbs to your axe blows: ORC KILLED. EXPERIENCE + 6. VICTORY. The scene returns to normal but there is now a chest beside you. You step on to it and press G for Get. The screen flashes again: ACID TRAP – your Hit Points fall again, but you have gained 24 Gold! The figure with the sword attacks you while you attempt to escape through the hills. Again the scene changes to close up for the fight, but, because you were on different terrain, the battle ground is different. Rocky outcrops near the centre of the screen provide good cover so that only one of the two Rogues can attack you at a time. Unfortunately, you don't manage to kill him very quickly, and your Gold starts reducing! The dexterous little thief appears capable of robbing you even while fighting you! You finally finish these two off, Get another chest and head off East again.

Finally rounding the last of the mountains you come to a river. You spy a bridge across it and head towards it. The ground around the river has a slightly different appearance to normal grassland – the dots are bigger and more coloured. As you cross this new terrain there is a sudden flash, and the G on your status line which indicated your character's Good health has changed to a P. P for Poisoned! This must be the marsh with the poisonous gasses of which the History of Brittannia warned you! With each step now your Hit Points decrease. You quickly search the Book of Mystic Wisdom and find a Cure spell. Reading the description carefully you determine that a Cure can be cast by mixing Ginseng and Garlic. Hey, that's what you have. M for Mix. C for Cast. CURE FAILED. M.P. TOO LOW. M.P.? Ah, yes, Magic Points – determined by your character type and his or her intelligence. Check the book again. How many should a Fighter have? None! – Fighters can't use magic! Hit Points getting dangerously low, best try and find a town with a healer. Unfortunately, since you haven't the slightest idea where you are, you fail. Your Hit Points reach Zero. ALL IS DARK, BUT WAIT, WHERE AM I? AM I DEAD? AFTERLIFE? I FEEL MOTION. The scene changes. You are in Lord British's throne room. Lord British rises and says, *'At long last thou hast come. We have waited such a long time'*. He sits and says, *'A new age is upon Britannia. The great evil lords are gone* (see Ultima I, II, and III) *but our people lack direction and purpose in their lives. A champion of virtue is called for. Thou may be this champion, but only time shall tell. I will aid thee in any way that I can. How may I help thee?'*

This looks like your opportunity ...

This looks like your opportunity to learn a bit. What should you ask? Try HELP. *'Travel not the open lands alone. There are many worthy people in the diverse townes whom it would be wise to ask to join thee. Build thy party unto eight travellers for only a true leader can win the Quest.'* Quest? Ah, yes, the game is called Quest of the Avatar, wonder if Lord British knows what the Quest is, or what an Avatar is? QUEST *'The Quest of the Avatar is to know and become the embodiment of the eight virtues of*

goodness. It is known that all who take on this quest must prove themselves by conquering the Abyss and viewing the Codex of Ultimate Wisdom.' ABYSS *'The Great Stygian Abyss is the darkest pocket of Evil remaining in Britannia. It is said that in the deepest recesses of the Abyss is the Chamber of the Codex. It is also said that only one of highest virtue may enter the chamber, one such as an Avatar'* AVATAR *'To be an Avatar is to be the embodiment of the eight virtues. It is to live a life constantly and forever in the quest to better thyself and the world in which we live'* VIRTUE *'The eight virtues of the Avatar are Honesty, Compassion, Valor, Justice, Sacrifice, Honor, Spirituality, and Humility'.*

What a knowledgeable fellow this Lord British is!

So, that is how your first half hour of Ultima IV might go. The next couple of hundred hours will be spent exploring the many towns, castles, and unmapped villages that are scattered throughout the lands, talking to the well over 200 different people in them, mapping the uncharted seas that fill vast areas of the map (assuming you can get hold of a ship!), discovering the existence of and tracking down numerous artifacts without which you cannot win, searching the mountains for secret entrances to dungeons, mapping the depths of the numerous dungeons (this involves a certain amount of magic, and an awful lot of fighting!), persuading seven other characters to join you, finding out how to achieve partial avatarhood in a particular virtue, and then achieving it in all eight, and last, but definitely not least, braving the Abyss.

The next couple of hundred hours will be spent exploring ...

This has to be one of the best computer games of all time. Ultima (I) was a nice little game. Ultima II was excellent. When I played Ultima III I thought it was superb. The authors have used all their experience from those earlier games to produce a game which is beyond all my expectations. Those of you who have played the earlier games and are looking forward to Ultima IV will not be disappointed. They have pushed back the boundaries in countless ways to make this one of the all time greats.

A friend of mine stayed with me recently. He is a fanatical games player. He owns a BBC with many games. I showed him Ultima IV. He stayed an extra night. He went out to buy an Atari the next day. He says it's the best computer game he has ever played. I think I agree with him.

Anyone who has experienced Dungeons and Dragons in any of its many forms will have recognised from the description of the start of a sample game that this is indeed a computerised version of D&D. It is an extremely well thought out implementation. Lots of thought has gone into making it very playable and enjoyable. It is driven by single key commands from the keyboard, the joystick is not used. Some commands require further input, for example, when talking to people you use single words picked from their conversation to probe for more information, also if you, say, 'Ready a weapon' you will be asked which member of your party wishes to Ready (reply 1 through 8) and the top right window will immediately fill with a list of all your spare weapons, each identified by a single letter for you to type in (a great improvement on Ultima III where you had to remember what weapons you had and look up the appropriate letter on a reference card). There are eight different character classes: Mage, Druid, Paladin, Shepherd, Fighter, Tinker, Bard and Ranger, all with different abilities and characteristics. Once you understand what is going on you can actually answer the gypsy's questions in such a way as to become whichever one you want, but don't waste time with that initially, just take what you get. Beware, a party can only have one of each class, so don't waste time trying to persuade anyone of your own class to join you!

... a game which is beyond all my expectations.

Terrain is varied, and affects both movement and combat. It is also varied out at sea. Once you have acquired a ship you will find open seas, deeps, rivers, shoals, bridges, whirlpools and whirlwinds to negotiate, not to mention the fact that the wind always seems to be blowing the wrong way and that the seas are teeming with monsters.

The combat is excellent. You can arm your party with numerous weapons: axes, maces and swords for close up, slings, bows and crossbows for shooting the length of the screen, halberd for hitting the enemy over the heads of your comrades or over obstructions such as the side of a ship, plus numerous magical weapons which are rather harder to come by but well worth acquiring! Within combat the terrain is varied, especially in dungeons, where there are countless rooms each with its own layout including such things as streams, lava, energy fields, walls and bridges, as well as secret doors, treasure chests and traps of all sorts. In the countryside and in dungeon corridors you are attacked by whatever chances your way, the more experienced you are the nastier it is likely to be, from orcs and skeletons up to balrons, dragons and reapers. The size of the attacking party will depend on the size of your party – there will be usually be more of them than there are of you! Dungeon rooms on the other hand are predefined. Each one is a carefully designed set piece, with particular monsters in particular positions – the deeper the nastier – don't venture too deep too soon!

Once you have engaged in combat, or entered a room, the members of your party appear separately across the bottom of the screen. Each of them gets a chance to do one thing, then the enemy pieces get one turn each, then each of yours and so on. The range of actions is quite wide: a character any move one square, change weapons, attack with a weapon, cast a spell (provided you have mixed it before entering into combat), or pass. So each fight, once you have a party of more than a few characters, is like a miniature board game, where you and the computer are moving your pieces round a board and fighting for the best position. The enemy can have powerful magic on their side. One of their favourite combinations is a group of reapers or balrons, protected by walls, energy fields or their allies, throwing multiple sleep spells at your party. If any of your party get SLEPT then they are liable to be beaten to death by hordes of daemons and phantoms before they can be wakened. In order to survive you will need to learn how to use magic yourself.

A friend of mine ... went out to buy an Atari the next day.

Magic is well implemented. You are provided with the Book of Mystic Wisdom. This contains details of 26 spells ranging from simple Light and Cure Spells to the much more difficult Tremor (devastating against most enemies) and Resurrect. Most of the characters can start using some of the simple spells right from the beginning of the game. Not so the more difficult ones, for a number of reasons. First, the Book is incomplete and inaccurate in its description of the mixtures of reagents needed to prepare for the casting of some of the spells. Second, only six of the eight reagents are sold in Herb Shops, the other two, Nightshade and Mandrake Root are extremely difficult to come by (even if I told you exactly where they are you probably still couldn't find them!) and are of course required for the best spells. And even if you should eventually track down the formulae and the ingredients, you might still fail if you did not have a sufficiently powerful magician in your party. There are ways to improve your characters, so eventually you should be able to cast any spell you wish.

The Lands of Britannia are large. You will need to travel them many times, and make careful notes. There are many reasons you will need to revisit towns, villages, and castles. Apart from the obvious one, that you haven't discovered all of a place's secrets (and they have many), you will also find that certain weapons, for example, are only available in certain towns, that not all towns have Herb Shops or Food Stores, and that prices for goods vary from place to place. You will also find that a person you talk to will refer you to a character in a different town. Armed with this knowledge you can revisit someone you have talked to before, prompt him with new keywords you have discovered and gain new information. These little subsidiary quests are not always easy, as some locations are almost completely inaccessible, and also the object of your search may well be very cleverly hidden or disguised.

There are numerous ways to travel: on foot, horseback or ship, by Moon Gate and by Magic. And there are rumours of a lighter-than-air device, according to the History! There are also rumours of Thieves Guilds, somewhere out on the uncharted seas, well worth a visit, as those of you who have played previous Ultimas will be aware. They are a source of items such as keys and magic gems which enable you to get an overview of the surrounding land or dungeon area (32 by 32 (22 by 22 in a dungeon) instead of the usual 11 by 11). A visit to the Lycaeum is also thoroughly recommended as early in the game as possible. Dungeon corridors are similar to those in Ultima III, you get a view of what you can see down the corridor, instead of the usual view from above, but they are much more sophisticated than those of Ultima III. Each Ultima III dungeon is made of eight square layers directly above each other. In Ultima IV there is no such uniformity. Dungeons ramble in all directions, Up and Down spells rarely work (and even more rarely work usefully!), there are countless dead ends, illusions, and one way ladders. The solving of a single dungeon in Ultima IV has more in it than a lot of games on the market.

... one of your many objectives is to become a partial avatar in all eight virtues.

One interesting facet of this amazing game is the fact that one of your many objectives is to become a partial avatar in all eight virtues. This means that you are a Good Character. You must think twice before stealing treasure chests from castles, or shooting fleeing enemies in the back. You will have to learn lots of little ways of proving to the game that you are a good guy. Initially you will find some of the philosophy thrown at you by various of the inhabitants to be a trifle confusing. Hopefully it will all become clear as the game slowly unfolds. If it doesn't you are in trouble as you need to unravel quite a lot of clues hidden therein in order to win the game!

Finally, once you have gathered all your friends, armed them all well, proved what a good guy you are, and acquired not only numerous artifacts but also vast knowledge, you MAY be ready for the Abyss. Unlike the other dungeons, this one's entrance is well guarded and unmarked; should you actually succeed in reaching it and locating it you will find that the usual E for Enter is completely inadequate. If you ever manage to get inside it, you will find that it makes all the other dungeons look like child's play. And if you should actually happen to have with you all the knowledge and artifacts necessary to reach the entrance to the Chamber of the Codex, not to mention being able to survive long enough to map and progress through all eight levels of the Abyss – and that means passing through over forty rooms full of monsters and traps – even should you get there, there are some very nasty twists left to prevent you achieving full Avatarhood. But I'm not going to give you any clues on that yet!

The documentation is superb, except for a couple of details. It never mentions the fact that the space bar can be used to PASS (note that this affects things like movement of enemies and restoration of Magic Points, but NOT the moons or the winds) or to make the game move on during certain parts of conversations, during the initial preamble with the gypsy, and to get rid of the Title Page after you have booted the game. Nor does it tell you what to do if the phone rings during a crucial battle. Z is actually a valid PAUSE command at any time that you can use it. If you don't pause the game with Z then it will assume you wish to PASS after waiting 18 seconds (12 seconds if you are in combat). The only place where you must concentrate, since too long a pause can be disastrous, is during meditation (just hope the phone doesn't ring then!). Also it is not clear whether or not you can have two long-lasting spells in effect at once. The P for Protection, J for Jinx, and Q for Quickness all use the same space in the middle of the centre right window. Each of these can last for many turns. By casting a new one you erase the letter indicating the continued effect of the previous one, but have you actually cancelled it?

There is a minor bug caused by riding a horse into Castle Britannia. If you dismount to Klimb the stairs, on your return to the ground floor you will find your horse has disappeared!

Finally ... you MAY be ready for the Abyss.

One improvement on previous Ultimas, which is undocumented, is the fact that the save facility (Q for Quit and Save) is a proper Save in the usual adventure style. In Ultima III if you entered a town or dungeon an automatic save was performed by the game whether you liked it or not, and should one of your characters die he was immediately marked as dead so that you couldn't restore to get him back. In Ultima IV you can suffer major catastrophes without concern,

continued on page 70



by Mark Hutchinson

I would firstly like to thank all the people who contacted me about the ANALOG issues, especially Chris Kemp. I have not forgotten the pinball, Matthew. I will try to send you some files soon.

ATARIWRITER

A few months back my old 400 decided to lie down and die. I promptly bought an 800XL and continued pounding keys. For some reason the ATARIWRITER cartridge I won from PAGE 6 (thank you readers!) would not work with the XL. The first few lines printed out, but after that would come line feeds corresponding to the page feed. I was able to borrow another XL, but the same thing occurred. This was most disconcerting and I can only guess at the cartridge being an original and using I/O port B which is used by something else on the XL.

Recently I have been able to lay my hands on ATARIWRITER PLUS. All the printer problems seem to have disappeared. I mention this problem because I am sure that many will have changed to the XL during the clearance sale. If so, make sure you see the printer working first before you buy the cartridge!

I have had a go at the 1029 printer and, for the money, I found it very good. I consider it a printer crying out for programs. By the time you read this, if I can borrow it again, I shall have tried out PRINT SHOP with it. I also obtained a screen dump program but have not had the time to try it out. If you are interested please contact me.

JOYSTICK ROUTINES

This month I have included a simple program to show a joystick in action, some of you may recognise it. The program will display the positions of the joystick and the numbers returned from the memory location of STICK(0) – location 632. To keep it simple, I have used conditional statements (IF/THEN) to coincide with the values returned. As you can see, although it is easy to read the program, it takes up a lot of lines. In issue 10 I gave a listing that would reduce most of the lines using Boolean algebra. Have a look over that listing again, it was used to good effect by Cliff Winship in issue 22. This time we will have a look at how to do this using a simple array to store the X and Y offset – what has to be added to X or Y for the next position.

```
EI 1 REM ********************************
UT 2 REM *     SIMPLE JOYSTICK DEMO     *
LO 3 REM *         FIRST STEPS          *
EB 4 REM * ---------------------------- *
GM 5 REM *  PAGE 6 Magazine - England   *
EN 6 REM ********************************
NM 7 REM
NN 8 REM
RK 9 REM *** SET UP SCREEN, COLOURS AND
   HIDE CURSOR
WZ 10 GRAPHICS 0:POKE 752,1:POKE 712,194:
   POKE 710,32:? "JOYSTICK DEMONSTRAT
   ION"
VS 20 ? "14
   
   9 | 5  11—15—7  10 | 6
    |  13"
GG 29 REM *** CLEAR KEYBOARD LOCATION
ZS 30 POKE 764,255:POSITION 8,22:? "PRESS
   ANY KEY TO END"
ZR 39 REM *** LOOK AT JOYSTICK
SN 40 P=PEEK(632)
HI 49 REM *** CHECK VALUES RETURNED
MW 50 IF P=15 THEN POSITION 15,12:? "15":
   FOR T=1 TO 20:NEXT T:POSITION 15,12:?
   "15"
IL 60 IF P=7 THEN POSITION 19,12:? "7":FO
   R T=1 TO 20:NEXT T:POSITION 19,12:? "7
   "
EU 70 IF P=11 THEN POSITION 11,12:? "11":
   FOR T=1 TO 20:NEXT T:POSITION 11,12:?
   "11"
PP 80 IF P=14 THEN POSITION 15,8:? "14":F
   OR T=1 TO 20:NEXT T:POSITION 15,8:? "1
   4"
TG 90 IF P=13 THEN POSITION 15,16:? "13":
   FOR T=1 TO 20:NEXT T:POSITION 15,16:?
   "13"
LG 100 IF P=10 THEN POSITION 13,10:? "10"
   :FOR T=1 TO 20:NEXT T:POSITION 13,10:?
   "10"
RF 110 IF P=6 THEN POSITION 17,10:? "6":F
   OR T=1 TO 20:NEXT T:POSITION 17,10:? "
   6"
JZ 120 IF P=9 THEN POSITION 14,14:? "9":F
   OR T=1 TO 20:NEXT T:POSITION 14,14:? "
   9"
CJ 130 IF P=5 THEN POSITION 17,14:? "5":F
   OR T=1 TO 20:NEXT T:POSITION 17,14:? "
   5"
RR 139 REM *** WAS KEYBOARD USED?
LN 140 IF PEEK(764)<255 THEN GRAPHICS 0:E
   ND
IB 149 REM *** DO IT AGAIN
OO 150 GOTO 40
```

As the joystick returns a value of up to 15, I have set up an array of 30-(15 for the X offset and 15 for the Y offset). The offset values are read into the array. When the program gets a value (P) from the joystick it looks at the corresponding point (P) in the array for the X offset and for the Y offset (P+15). These are then added to the current value of X and Y and a new position is plotted. The program then goes back to the beginning.

I have used a TRAP to avoid programming for wrap around (making the dot disappear at one side and appear at the other). When an error occurs, the TRAP sends the program to line 1000. Here the TRAP is cleared and the program is sent back to the original X and Y positions. Note that the TRAP has to be reset. I remembered Steve Wayne's letter and loaded the listing with REM's (they can all be left out!).

COMING UP

In a future column I want to look at all those tidbits the experienced users know about but never pass on to beginners, e.g. CONTROL-1. However, I will need some help from the 'old-time' readers of this magazine. Knowing these things is one thing, remembering them when writing this column is another! I want you to send me as many as YOU can remember. You may think that you are helping me, but you are really helping all those people who just bought a new ATARI – remember the day when that was YOU? If I do not receive any then I will write about something else!

```
EI 1 REM ********************************
QS 2 REM *       JOYSTICK ROUTINE       *
PX 3 REM *        USING AN ARRAY        *
LP 4 REM *          FIRST STEPS         *
EC 5 REM * ---------------------------- *
GN 6 REM *  PAGE 6 Magazine - England   *
EO 7 REM ********************************
NN 8 REM
FG 9 REM *** READ OFFSET INTO ARRAY.
XB 10 DIM ARRAY(30)
AV 20 FOR A=1 TO 30:READ OFFSET
NF 30 ARRAY(A)=OFFSET
FY 40 NEXT A
RY 49 REM *** SET UP SCREEN.
OG 50 GRAPHICS 5
LQ 59 REM *** SET UP INITIAL POSITION.
RA 60 XPOS=20:YPOS=20
FE 69 REM *** LOOK AT JOYSTICK.
SQ 70 P=PEEK(632)
SF 79 REM *** TRAP OUT OF BOUNDS ERROR.
GN 80 TRAP 1000
XO 89 REM *** MAKE SPOT DISAPPEAR (TAKE
              OUT LINE 90 FOR CONTINUOUS
              LINES)
XR 90 COLOR 0:PLOT XPOS,YPOS
OT 99 REM *** ADD OFFSET.
YF 100 XPOS=XPOS+ARRAY(P):YPOS=YPOS+ARRAY
   (P+15)
SE 109 REM ** PLOT NEW POSITION.
NH 110 COLOR 1:PLOT XPOS,YPOS
IX 119 REM ** DO IT AGAIN.
RO 120 GOTO 70
PH 499 REM ** X OFFSET FOR JOYSTICK VALUE
ME 500 DATA 0,0,0,0,1,1,1,0,-1,-1,-1,0,0,
   0,0
PU 599 REM ** Y OFFSET FOR JOYSTICK VALUE
NA 600 DATA 0,0,0,0,1,-1,0,0,1,-1,0,0,1,-
   1,0
OZ 999 REM ** CLEAR TRAP AND RETURN TO
              ORIGINAL POSITION.
WU 1000 TRAP 40000:GOTO 60
```

A SOUND SAMPLER

To Jim Darnill who is looking for a sound sampler, try 2-BIT SYSTEMS. Their demo's are great. Hopefully PAGE 6 will have a review of this program in this or the next edition.

HELP!
EXPERIENCED USERS

Shortly I shall be compiling as many ATARI tips as possible. For this I shall need your help. If you know such things as using CONTROL-1 or switching on the cassette motor to listen to tapes then please send the details to me as soon as possible. Your input to me will help all those new readers learn about things that we take for granted and because they are taken for granted, they are hard to list, which is why I need your help.

Write to Mark at BAUG Software, P.O. Box 10, Belfast, BT10 0TB

Contact

1029 PRINTER WANTED: We need a cheap 1029 printer to test out some of the programs sent in for publication. Anyone got one to sell? Contact Les Ellingham at PAGE 6 on 0785 213928

RAMSDEN BBS: Now available to users. Operating on 0268 710637 at 300/300 all the time except 9 a.m. to 5 p.m. on weekdays. The board operates on an immediate answer system. Sysop – M. Crump

MEGA SALE: 800XL never used, bought as a package for the disk drive. £50 o.n.o. Replay Sound Sampler, complete package including software. £30. Barry Armstrong, 230 Foxdenton Lane, Chadderton, Oldham OL9 9QR. Tel. 061 652 4781 after 4 p.m.

ANALOG WANTED: Has anyone got a spare copy of issue 31 of ANALOG magazine. I have an issue 34 ANALOG and no.8 Dec. 1985 Atari User going spare. Please write to Bernard Castle, 128, Newport Road, Cowes, Isle of Wight, PO31 7PS.

HITCHHIKERS GUIDE: I am totally stuck with the manual on the place where the fish is. What do I do? I have many Infocoms and can give hints on any Channel 8 adventure or Adventure International. Will someone please write and swap hints. Andrew Thompson, 135, Henllys Way, St. Dials, Cwmbran, Gwent, S. Wales, NP44 7NF

ANALOG WANTED: Issue 29, April 1985. Good price paid. Phone Colin Saunders on 01 422 2375.

CONTACT FROM TURKEY: I would like to contact any Atari users from any country. I have a 130XE, 800XL, 1050 disk drive, 1010 recorder, 1020 printer and 1027 printer. Expert in BASIC and know machine code at advanced level. Anybody willing to discuss or swap hints and techniques about programming would be welcome. Ata Atun, P.O. Box 81, Magosa, Mersin-10, Turkey.

KIT FOR SALE: Atari 400 48k, 1010 cassette, Indus GT (brand new), DOS XL with Indus GT Synchromesh, computer housing, holds 400, GT, 1010, all power supplies. BASIC cartridge, manuals. All for only £280. Phone 0268 710983 and ask for Mike.

FOR SALE: Atari 800XL, 1010 Datacorder, joystick, 8 programmed tapes, 6 blank tapes, Compute!'s Atari Collection Vol.1, Atari Basic book. All in brand new condition. £70. A.F. Cogswell, 19, Marjory Walk, Yealhampton, Devon PL8 2NX. Tel. 0752 881263 anytime.

ATARI ROOTS: Please can I buy, beg, borrow a copy of Atari Roots? Postage paid etc. Phone Mr H. Field 0634 252845.

ATARI CLEAR OUT!: Main items, 800XL, 130XE, Commodore monitor, 1050 disk drive, joysticks, books, blank disks/cassettes, ANTIC, ANALOG, PAGE 6, ATARI USER, other mags, accessories. Everything in mint condition. Something for everyone. Bargain prices. Call Matthew, Newhaven 513671, evenings.

FOR SALE: Omnimon M/C monitor for the Atari 400/800 £45. Wordmaker Speech Synthesiser, cased inc. P.S.V. £45. Speech Recognition system £26. Atari Trackball £11. Blackthorn Centronics Interface. £38. R. Hearn, 10, Speedwell Close, Pakefield, Lowestoft, Suffolk, NR33 7DU. Tel. 0502 66026.

ATARI ST INTERNALS: As reviewed in issue 21. Unwanted present from the States. Will sell for £14 or swap for the right books on Atari 8 bit machines. Phone 021 308 7401.

FOR SALE: Epson FX80+ printer, cable and Atari 850 interface. 17 months old and in mint condition. £270. May split. Please phone or write to Mike Lynch, 24, Oakdene Road, Anfield, Liverpool L4 2SR. Tel. 051 264 8435.

PAGE 6 BACK ISSUES: Unavailable copies of PAGE 6 for sale. Issues 7, 8, 9, 11, 14 and 18 at £1.00 each inc p&p. Please phone after 6 p.m. 0245 72572.

PEN PALS WANTED: I have a 600XL (64k), 1020 printer, 1010 cassette and two joysticks. Here in Belgium, I don't have much success to make contact with other Atari users. Please write to Johan Sleuwaegen, Schuttershofstraat 40, 2670 Puurs, Prov. Antwerpen, Belgium.

PEN PAL WANTED: Especially in the U.S.A. or in the U.K. or anywhere in the world. Must be an Atari and cassette user. Wanted to swap hints etc. Also does anyone know how to get underground in Zorro? Contact Malcolm Little, 58, Christchurch Avenue, Rainham, Essex, RM13 8JA, England.

MAGAZINES FOR SALE: ANALOG, ANTIC, PAGE 6, MONITOR, COMPUTER GAMING WORLD and books on Atari. Please send s.a.e. to Mr H. Field, The Chimes, Bells Lane, Hoo, Nr. Rochester, Kent, NE3 9HT for list.

CENTRONICS 739 PRINTER FOR SALE: Accepts all Atari 825 printer codes as per printer option 2 from Atariwriter. Takes roll, single sheet and tractor fed paper. Spare ribbon, handbook and Micropainter/Touch Tablet dump included. Requires Centronics interface (such as Atari 850 or similar). £110 o.n.o. Phone Derryck 0923 673719 (Watford).

MAGAZINE SWAP: Will swap public domain software for magazines i.e. PAGE 6, ANTIC, ANALOG etc. Send a s.a.e. for details to Peregrine Hill, 24, Conclurry Street, London, SW6 6DS.

800XL COMPUTER WANTED: Has anyone fitted an Inhome B400 keyboard to an 800XL? Contact David Wade, 44, Havencrest Drive, Leicester, LE5 2AG.

BELGIAN PEN PAL: My name is Peter Hauben and I live in Mechelen, Belgium. I own an Atari 800XL and a 1010 cassette recorder. I am looking for pen-pals around the world to swap hints and ideas with. Please write to Peter Hauben, Hombeeksesteenweg 390, 2800 Mechelen, Belgium.

COMPLETE ATARI SYSTEM: Atari 130XE computer, 1050 disk drive (with US Doubler fitted), 1029 printer, 1010 cassette, 1020 printer/plotter, Datari modem interface, many items of disk/ROM software. All hardware with packing and full instructions. £450 o.n.o. (will split for good offers). Call Phil Redman 01 639 3916 daytime, 01 299 2381 evenings.

HELP!!: Stuck on Pay Off, Lucifers Realm and Arrow of Death Part 1. Can swap help on Time Machine, Adventureland, The Golden Baton, Ten Little Indians. Write to Marc Jones, 5, Dovesmead Road, Heswall, Wirral, L60 1XL.

RADIO HAMS: I have an ST which I wish to run RTTY on. Can anyone help? Listings in C (or BASIC) okay. Also does anyone want to swap 800XL, 1050, 850, 1020, 1010 and software for a printer to connect to the ST? I would like a NLQ dot matrix printer, preferably an Epson or alternatively sell all for £350 (including numerous books). Contact G1BIG not QTHR. V.J.Wood, EWOSE, RAF Wyton, Huntingdon, Cambs.

FOR SALE: Spare 600XL £40. Spare 800XL £55. Also 64k expansion for 600XL £25. Letter Quality 1027 printer £80. Does anybody want a duff 1010 datarecorder for spares? £5. Tel Westhoughton (0942) 812843.

1020 PRINTER: Any programs/utilities for the 1020 wanted. Also 800XL for sale. Offers please to Pete Cunningham, 11, Berwyn Avenue, Penyfford, Chester, CH4 0HS. Phone 0978 760172.

ANALOG & DISK FOR SALE: ANALOG magazine and disk for May and June 1986, unopened. £5 each. Jonathon Smith, 4, Hall Close, Glen Parva, Leicester, LE2 9HZ. Tel. 0533 787100.

GOING ONLINE Part 1

Telecommunications is still a mystery area to many owners. Is it worth it? What equipment do you need? In this two part article John Davison reviews the most popular package and gives a first hand account of his experiences.

by John S. Davison

"No! You can't have a modem – we'll need a second mortgage to be able to pay the phone bills!" Such was the response from The Lady of Infinite Wisdom the first time I hinted it might be fun to explore the brave new world of telecommunications.

"And anyway", she added, "I bet the modem costs a fortune. We've got enough computer stuff about the place as it is".

I had to agree with the drift of this argument, and put the idea out of my mind.

Unfortunately, at the next meeting of the local Atari computer club the Treasurer happened to mention he'd got a telecommunications package for the Atari. Being a kind soul he offered to lend it to me for a couple of weeks. The package consisted of a WS2000 modem, the Datatari serial interface, and Multi-Viewterm communications software, all supplied by Miracle Technology. In short, everything I needed to 'go online' and explore the exciting new world of telecommunications.

It was with some trepidation that I carried the forbidden items into the house after the meeting that night. The Lady noticed the silly smirk I must have been wearing.

"You've got a modem, haven't you?", The Lady said with incisive intuition.

"Er, yes, but only for a few days", I stammered. "Just to learn with – it belongs to someone at the club. I'll only use it for local communications, so the phone bill won't suffer", I lied, hoping The Lady wouldn't see through me.

"It won't suffer, because you'll be paying for each call as you make it", she said, sweetly, handing me a jar with a coin slot conveniently cut in the lid.

So we came to an amiable agreement, and the modem was given a temporary visitor's visa to the household. There followed a short period of intense concentration while I attempted to find out just what it was I had borrowed.

THE WS2000 MODEM

This is a small, neat, black plastic box measuring about 6in. by 6in. by 2.75in. It looked very smart sitting on top of the disk drive. The front panel carries three rotary switches operated by stylish black knobs. These control Online/Local Test modes, Viewtext receive/bulletin board and other modes, and finally whether CCITT (European) or Bell (USA) standards are used, and the data transmission rates that go with them. For use in the U.K. the Bell standard settings have been inhibited by the manufacturer. The white and red lettering round the switches is clear and easy to read. On the left of the front panel is a vertical row of 5 LED's, which light up to show the status of the modem at any time. It's not always obvious what the front panel settings should be for a given communications session making careful study of the manual a must.

The back panel carries four sockets, a fixed mains cable, a fixed line cable and plug to connect to the BT wall socket, and a mains on/off switch. The sockets are used as follows: Accessory Port for future expansion, e.g. for acoustic coupler and battery backup devices; Telephone Socket to plug in your telephone; User Port for remote control of the modem from a computer or other control device; and an RS232 Port, which is the normal way of connecting the modem to an Atari. The two of interest here are the Telephone and RS232 sockets.

The WS2000 supports just about any transmission mode and speed you're likely to need in the 'non-professional' area. It supplies 300 baud full duplex, 600 and 1200 baud half duplex for bulletin board and direct user to user connection, and 1200/75 and 75/1200 baud full duplex for use at terminal or host end of a Viewtext service. Miracle Technology can provide autodial and autoanswer boards for this modem, but neither were fitted to the one on loan.

THE DATATARI INTERFACE

This appears to be a cable with a standard Atari serial I/O plug on one end, and an RS232 plug matching the modem socket on the other. Using this interface does away with the need for the hard-to-find Atari 850 interface. Anyway, the 850 doesn't support split 1200/75 baud transmission rates required by Viewtext systems in the U.K., so in this respect the Datatari is a better buy than the 850 for telecommunications use.

MULTI-VIEWTERM SOFTWARE

This program was written by Matthew Jones, a regular contributor to PAGE 6. It's almost completely menu driven, which means it's easy to use, especially for the beginner. It has two main modes of operation, offline and online.

In offline mode it allows you to configure the software for the communication session you're about to

establish, setting baud rate, parity, whether full or half duplex, Teletype or Viewtext mode, and whether line feeds are to be automatically generated. When you've set up a configuration you can save it to cassette or disk for use at a later date. This means you can keep a library of the configurations of all your favourite bulletin boards and configure your system to use any one of them simply by loading the appropriate file in. This could save you a lot of time if you use many boards, as people usually do.

Incidentally, don't worry about the jargon too much, you'll soon pick it up. Most of what you need is explained in the instruction manuals that come with this package.

Offline mode also lets you save incoming messages from a buffer in RAM onto cassette or disk, or to load existing files into the buffer for viewing, transmitting, or printing. The menu also lets you list the directory of a disk, delete files, and protect or unprotect files.

A further offline facility allows you to set up user defined keys for use in online mode. The most common use for these is for storing frequently used commands, or your name and passwords, which can then be input with a single keystroke. Useful, as saving time saves you money.

Online, or terminal mode is the one you use for the actual communication session. In this mode, your computer becomes a terminal with the characteristics you defined when you set up the configuration. You can transmit data from the keyboard or the buffer to the remote computer, and receive data for display on your screen from the remote computer. Optionally, you can capture data received by having it stored in the RAM buffer for manipulation as described above.

When in Viewtext mode you also have several pre-set function keys. These transmit frequently used PRESTEL commands, such as go to main index, go to previous page, leave PRESTEL, etc. Other option keys are available for things such as turning the buffer on and off, and setting the screen background colour. These are available in Teletype mode also.

Connecting Up

Preliminary investigation revealed that the modem had to be plugged into one of the new type BT wall sockets. The only socket in the house was the one for the extension phone in the bedroom. Unfortunately, the computer was about 20 feet away in another room, wired into a computer desk. For the sake of marital harmony, rather than move the computer desk into the bedroom, I bought a phone extension cable from a local electrical store. Cost – £5.50.

Connecting everything up was easy. I unplugged the phone, inserted the new extension cable in its place, then plugged the modem line cable into the other end of it. The phone then plugged into the back of the modem. Simple – a two minute job. The next job involved connecting the modem into the 130XE's I/O daisy chain. One end of the Datatari interface cable plugged into the free serial port on the back of the disk drive, and the other end went into the back of the modem. Again, dead simple. Finally the modem was plugged into the mains, and the hardware was ready for action – total setup time was less than 5 minutes.

Operating the System

The next step was to understand the software and operational aspects of the modem. The WS2000 modem and the Multi-Viewterm software each have their own slim instruction manuals. The 17 page modem manual makes liberal use of pictures as well as words. The front panel of the modem is rather intimidating, having many different settings possible on the rotary switches. Use of pictures to show you how they should be set is a much better idea than trying to explain in words. The manual is laid out logically, with separate sections covering initial setup and testing, online use to communicate with Viewtext type facilities (like PRESTEL and Micronet), bulletin boards, and direct contact with another user. There is also a useful section on fault finding, if things don't work as expected, but this is probably a little too technical for some users, especially beginners.

The 20 page Multi-Viewterm manual is fairly straightforward, giving a brief introduction to telecommunications, and then a brief description of each function of the software. There are no commands to remember, thank goodness, as virtually everything is available by menu selection or through function keys. The manual includes a cut-out template you can position above the numeric keys to remind you what they do when used as function keys, a nice touch.

One area it didn't cover was how to download software from a bulletin board. It covered the Viewtext side, but as Micronet doesn't have an Atari section it would have been better to include instructions on how to do this in Teletype mode, as there are a number of boards operating in this mode which do have Atari software available for downloading.

So, after spending a while reading and re-reading the two manuals, doing the basic modem tests, and familiarising myself with the software menus, the Big Moment had arrived – time to contact a bulletin board!

Using the Package

The next few days (or rather nights – cheap rate phone calls!) saw me contributing significantly to BT's 1986 profits, as I grappled with bulletin boards good and bad. The story of what happened makes an article in itself, so I'll save the gory details for a later issue of Page 6. Let's go straight on to my impression of the products used.

In use, the package of products worked well, and appeared to do everything claimed for them. I'd never used a bulletin board or PRESTEL before, but this package made the whole operation fairly painless. It costs about £185 for the complete system, although the items may be bought separately, if required, about £125 for the modem alone, and about £60 for the Datatari interface together with the Multi-Viewterm software. Normally, though, you'd probably buy the whole lot together as a complete telecommunications system. This has to be one of the best ways for an Atari user to get online, if this is your interest.

The WS2000 modem in particular struck me as offering first rate facilities at a reasonable price. With the add-on facilities promised, and comprehensive interfacing and control features on the back panel, it

UPDATE



THE CHASE (ISSUE 19): The listing as printed will not run on the 400 or 800. After many head scratching hours the solution turned out to be amazingly simple. Just add a semi colon to the end of line 944! The only remaining puzzle is why, when the XL/XE machines don't need it?

FRACTALS (ISSUE 22): The book mentioned at the beginning of the article 'Frontiers of Chaos' is edited by Peitgen and Richter and not by Mandlebrot as stated.

QUICK DISASSEMBLER (ISSUE 21): There is a mistake on line 720 which should read as follows

720 IF ADRS<0 THEN ADRS=65536-LOC2

---

has the capability of being developed into quite a complex system in its own right.

My main criticism is aimed at the software, and concerns its downloading capabilities. As already mentioned, the manual gave little away in this area. Many of the boards contacted seemed to require the use of a special protocol, known as XMODEM protocol, for downloading software. Multi-Viewterm does not appear to have this. *(An upgraded version is now available. Ed.)* Also, the buffer used for capturing incoming data only seems to be about 12K in size. If you exceed this, it simply overflows and you lose the excess data. You do get a warning of this, though. So how do you download a program larger than 12K? I guess you can't at present.

As I've not used any other system it's difficult to judge its worth relevant to other products on the market. All I can say is, it worked, showed no obvious sign of bugs, and was easy to use. The beginner couldn't really ask for more. Experienced users might think otherwise, though.

I'm now trying to work out how I can change the visitor's visa The Lady granted to the package to something more permanent. Full naturalisation, perhaps? That could take some time, as The Lady knows what the true online costs are likely to be. That jar already has an awful lot of coins in it. This aspect will be covered in Part 2 of the article, which looks at the joys and pitfalls of 'going online'. ●

CROSSWORD RESULTS

What is the best way to win a prize in a competition? Enter it! It seems that our crossword last issue was much harder than we thought and we received only a few entries by the closing date so prizes were awarded to everyone who entered with priority going to those who sent the correct entry.

Those who got it right were Eddie Cousins from Scotland, C. Lane from Hull, Jason Quigley from Dublin, Colin Thompson from Liverpool and Paul Rixon from Sheffield. The runners up were G. Dutton, T. Alexander and Garry Francis(!!) – they may have got it wrong but at least they entered!

Appropriate prizes have been forwarded to all. We do not have space to print the correct answers but anyone interested can send a s.a.e. for the solution.

As a point of interest, the Editor once won a great prize in a competition run by a climbing magazine simply by entering. They had 100 prizes on offer and had quite a few left over because they had less entries. And their circulation was above 90,000! There's a lesson for you.

Demos

COLOUR MAGIC

Here are a couple of super demos from reader Christopher Fox. The first listing will surely tax your powers of 'CONTROL character' recognition but with the help of TYPO 3 and the chart on the Listing Conventions page you *can* do it! Believe me, it is worth it.

Listing 2 is much easier. Type them both and impress all of your family and friends with the power of Atari!

```
EI 1 REM *********************************
MP 2 REM *          COLOUR MAGIC 1         *
MI 3 REM *      by Christopher Fox         *
EB 4 REM * ------------------------------- *
IY 5 REM *  PAGE 6 MAGAZINE - ENGLAND      *
EN 6 REM *********************************
AW 10 DIM C$(303):AD=16383:A=16647:B=1667
   8:IF PEEK(16677)=50 THEN 60
LN 20 C$(1,101)="[illegible]
   [illegible]
   [illegible]
   [illegible]"
PL 30 C$(102,202)="[illegible]
   [illegible]
   [illegible]
   [illegible]"
PH 40 C$(203,303)="[illegible]PPPPPPPPPPPP
   [illegible]rrrr
   PPP00♥A0♥A0♥A0♥A0♥A0♥AA[illegible]♥♥♥♥♥[illegible]rr
   [illegible]#334DDEUUVfgwx[illegible]wvfeUUTDDC332[illegible]!rr
   rr♥"
PQ 50 FOR I=1 TO 303:POKE AD+I,ASC(C$(I,I
   )):NEXT I:POKE A,34:POKE A+1,34:POKE A
   +2,34:POKE B,34:POKE B+1,34:POKE B+2,3
   4
GM 60 X=USR(AD)
```

```
EI 1 REM ******************************
NR 2 REM *                            *
MI 3 REM *        COLOUR MAGIC 2      *
EB 4 REM *    by Christopher Fox      *
IY 5 REM * -------------------------- *
EN 6 REM *  PAGE 6 MAGAZINE - ENGLAND *
NM 7 REM ******************************
PP 10 DL=20480:TXT=81*256-1:MC=82*256
PM 20 AD=10240:DIM A$(80):POKE 623,0
UG 30 A$="   ATARI  COMPUTERS
     OK
        C.A.FOX.":POKE 764,255          RULE
YW 40 FOR I=1 TO 40:POKE TXT+I,ASC(A$(I,I
   ))+32:NEXT I:FOR I=41 TO 80:POKE TXT+I
   ,ASC(A$(I,I))-32:NEXT I:TRAP 60
NC 50 RESTORE 80:FOR I=DL TO DL*DL:READ D
   :POKE I,D:NEXT I
ID 60 RESTORE 100:TRAP 70:FOR I=MC TO MC+
   MC:READ D:POKE I,D:NEXT I
DE 70 TRAP 75:RESTORE 500:FOR I=AD TO AD+
   AD:READ D:POKE I,D:NEXT I
WN 75 POKE 559,34:X=USR(AD):GRAPHICS 0:X=
   USR(1664)
DI 80 DATA 112,112,112,112,112,112,112,11
   2,112,112,112,112,112,112,112,112,112,
   112,112,112,112,96,71,0,81,32,7,112,
UM 90 DATA 112,112,112,112,112
ER 100 DATA 112,112,112,112,2,65,0,80,END
UT 110 DATA 173,252,2,201,12,208,2
OD 120 DATA 24,96,198,250,164,250
SO 130 DATA 136,140,10,212,140,26,208
DL 140 DATA 173,11,212,201,28,208,242
KS 150 DATA 140,10,212
QR 160 DATA 200,140,10,212,140,26,208
HN 170 DATA 173,11,212,201,53,208,242
OH 180 DATA 169,0,141,26,208
XK 190 DATA 169,1,36,20,208,2,230,251
IS 200 DATA 165,251,168,24,105,50,170
KG 210 DATA 200,202,200,202,141,10,212
WI 220 DATA 140,23,208,142,25,208
NG 230 DATA 173,11,212,201,64,208,236
AC 240 DATA 165,251,24,105,12,168
MU 250 DATA 24,105,19,170
KO 260 DATA 200,202,141,10,212
BH 270 DATA 140,23,208,142,25,208
EZ 280 DATA 173,11,212,201,75,208,238
OS 290 DATA 165,250,24,105,249,168
AD 300 DATA 136,140,10,212,140,26,208
RR 310 DATA 173,11,212,201,99,208,242
KO 320 DATA 140,10,212,169,0,141,23,208
DR 330 DATA 200,140,10,212,140,26,208
AV 340 DATA 140,24,208,173,11,212
BU 500 DATA 208,241,76,0,82,END
   104,169,0,133,250,133,251,141
   ,48,2,169,80,141,49,2,76,0,82,END
```

by Christopher Fox

ULTIMA IV *continued*

since by rebooting you can restore to the last point at which YOU issued a Quit and Save.

The reference card says that you can switch the Colour option from standard 800 to XL series during boot-up. Unfortunately when it asks you which you want it doesn't tell you which is which. I can't get very good colour either way with my version, indeed I have to turn the colour control up on my TV to get any colour at all. The only problem this causes is that Marsh is a bit difficult to detect, but that may be intentional anyway! It may be that my colour problems are caused by the fact that my copy is an American import. Maybe the UK version will have fixed this. But it doesn't really matter, the game is so good that once you get hooked you are unlikely to worry about the colour.

The documentation also assumes that you understand some of the basic concepts of D&D, such as Hit Points, Experience, and Levels. If you have never come across any of this before then find a friend to explain it to you, or just play along and pick it up as you go.

If you have been wondering why you should add a disk drive to you Atari, here is the answer!

Ultima IV has a lot to offer, regardless of your interest. Whether you enjoy best the logical challenges involved in conversing with the townspeople, the exploration of the wilderness, or the fighting in the dungeons you are bound to find something in Ultima IV to get you hooked. You can even, as one of my sons did, set up your own objectives within this superb fantasy world. He decided to see how evil he could be – he now has the Seer coming out with responses such as '*Thou art a cad and a bounder, Thy presence is an affront. Thou art low as a slug!*' – he went too far when he attacked Lord British though: he turned out to be invulnerable!

If you have been wondering why you should add a disk drive to you Atari, here is the answer! If you have a drive already then you shouldn't miss this experience. I don't know how much the UK version will be, but if you compare it to the number of hours you are engrossed in Ultima IV I'm sure you will find it a bargain! I wonder when Ultima V will be out?

Take out a year's subscription to ATARI USER and we will send you this top-selling game absolutely FREE!



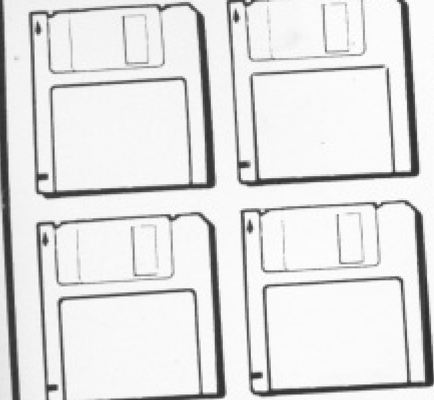
Cassette only. Suitable for all Atari 8-bit machines.

Caught on the surface of a nuclear devastated planet, you have only minutes to return underground before your radiation shield decays. In any other car you would stand no chance – in The Last V8 survival is possible . . . just!

This great game is the challenge of a lifetime! It features:

- Super-smooth 4-directional scrolling
- Top quality scene-setting graphics
- Superb theme music
- Detailed instrument panel readout
- Gripping arcade action

SPECIAL SUBSCRIPTION OFFER



For Atari ST users we can offer FOUR 3½" single sided discs for the unbeatable price of £5.99!

Only available when accompanied by a subscription order.

All prices include postage, packing and VAT.
Overseas orders despatched by Air mail.

Please enter number required in box. (✓) £ p

Annual subscription

UK & EIRE £12 (sterling only)	7001		
Europe £15	7003		
Overseas (Airmail) £30	7004		
Tick box if renewal			

Commence with .... issue

Exclusive offers for subscribers

The Last V8 (tape) .... Free (UK only)*	7071		
4 3½" discs £5.99*	7068		

Add £2 for Europe/Overseas

**These offers only available if accompanied by a subscription order.*

Payment: please indicate method (✓)

☐ Access/Mastercard/Eurocard Barclaycard/Visa — TOTAL

☐ Cheque/PO made payable to Database Publications Ltd — Credit card expiry date /

Name ________________________

Address ________________________

Signed ________________________

Send to: *Atari User*, FREEPOST, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Please allow 28 days for delivery

Order at any time of the day or night

Orders by Prestel:	Telephone Orders:	Enquiries only
Key *89, then 614568383	**061-429 7931**	**061-480 0171 9am-5pm**

Don't forget to give your name, address and credit card number